United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Virginia Polytechnic Institute and State University

Soil Survey of Smyth County, Virginia

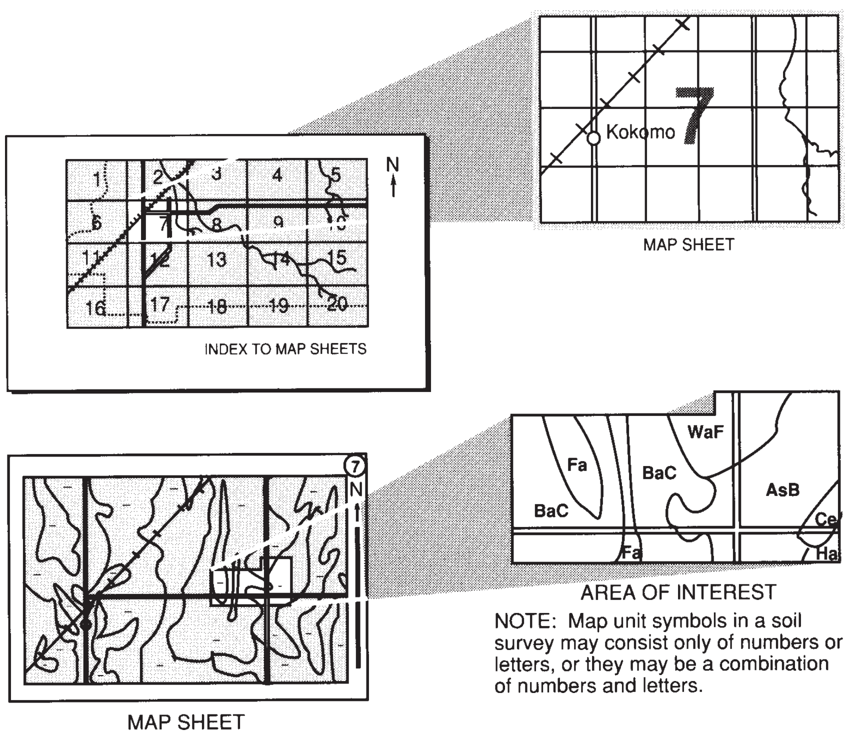
How To Use This Soil Survey

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and go to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Go to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1991. Soil names and descriptions were approved in 1995. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1991. The most current official data are available at http://websoilsurvey.nrcs.usda.gov/app/. This survey was made cooperatively by the Natural Resources Conservation Service and the Virginia Polytechnic Institute and State University. It is part of the technical assistance furnished to the Evergreen Soil and Water Conservation District. The Virginia Department of Conservation and Recreation and the Smyth County Board of Supervisors provided financial assistance for the survey.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: The view north from Iron Mountain, in the western part of Smyth County, looking out across the Great Limestone Valley towards Clinch Mountain in the background. These areas are in the Southern Appalachian Ridges and Valleys Major Land Resource Area.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

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Foreword

This soil survey contains information that affects land use planning in Smyth County. It includes predictions of soil behavior for selected land uses. The survey highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use the survey to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described, and information on specific uses is given. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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Soil Survey of
Smyth County, Virginia

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United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
Virginia Polytechnic Institute and State University

SMYTH COUNTY is in the southwestern part of Virginia, about 135 miles southwest of Roanoke (fig. 1). The county makes up about 452 square miles, or 289,500 acres. This soil survey covers about 340 square miles, or 217,700 acres, of non-Federal land. The Jefferson National Forest, a 112-square-mile mountainous area in the county, is included in a separate soil survey project. In 2000, according to the U.S. Census Bureau, the population of Smyth County was 33,081 *(19)*.

This soil survey updates the soil survey of Smyth County that was published in 1948 *(12)*. It provides additional information and soil maps with a photographic background.

General Nature of the Survey Area

This section provides general information about the survey area. It discusses physiography, relief, and drainage and climate.

Physiography, Relief, and Drainage

Smyth County lies dominantly within the Southern Appalachian Ridges and Valleys Major Land Resource Area. Iron Mountain, in the southern part of the county, lies in the Blue Ridge Major Land Resource Area (fig. 2). The Tennessee Valley Divide in the southeastern corner of the county splits the drainage systems in the county. The larger part of the county, northeast of the divide, drains into the three forks of the Holston River. The smaller part, southeast of the divide, drains mainly into White Rock, Blue Spring, and Crigger Creeks. These streams flow eastward, out of the county, into the New River in Grayson County.

The county is dominated by mountainous topography and is comprised mainly of sandstones and shales. The valley uplands throughout the survey area formed in residuum derived from limestone or shale and in colluvium from the surrounding mountains. The three main valleys in the county extend in a northeast-southwest direction and follow the three forks of the Holston River. Generally, elevation in the county ranges from 1,700 to 5,600 feet above mean sea level.

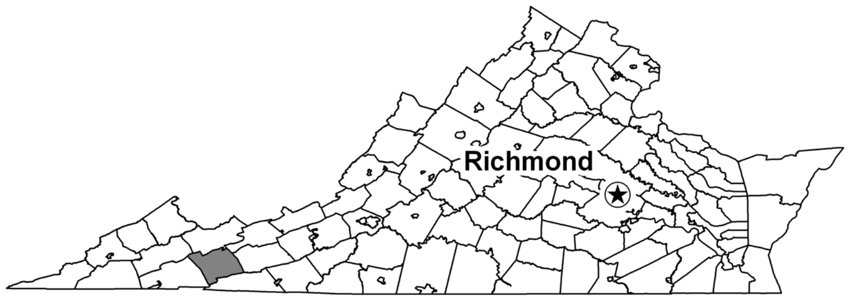

Figure 1.—Location of Smyth County in Virginia.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Burkes Garden, Virginia, in the period 1971 to 2000. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average temperature is 31.7 degrees F and the average daily minimum temperature is 21.8 degrees. The lowest temperature on record, which occurred at Burkes Garden on January 27, 1987, is -26 degrees. In summer, the average temperature is 65.9 degrees and the average daily maximum temperature is 77.2 degrees. The highest temperature, which occurred at Burkes Garden on July 16, 1954, is 96 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is 45.71 inches. Of this, 21.04 inches, or about 46 percent, usually falls in May through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 4.56 inches, recorded at Burkes Garden on January 15, 1995. Thunderstorms occur on about 37 days each year, and most occur in June.

The average seasonal snowfall is 52.5 inches. The greatest snow depth at any one time during the period of record was 21 inches, recorded on January 28, 1998. On an average, 37 days per year have at least 1 inch of snow on the ground.

The average relative humidity in mid-afternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 83 percent. The sun shines 61 percent of the time possible in summer and 55 percent in winter. The prevailing wind is from the northwest. Average windspeed is highest, 8.2 miles per hour, in March.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The

Figure 2.—The view north from the summit of White Top Mountain. The Blue Ridge Major Land Resource Area in Smyth County is in the foreground, and the Ridges and Valleys Major Land Resource Area is in the background.

unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic

classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

Detailed Soil Map Units

The map units delineated on the detailed soil maps represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase

commonly indicates a feature that affects use or management. For example, Frederick silt loam, 2 to 7 percent slopes, is a phase of the Frederick series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Wyrick-Marbie complex, 2 to 7 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, quarries, is an example.

Table 4 lists the map units in this survey area. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

1B—Austinville silty clay loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Smooth, broad summits and shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Austinville and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 6 inches—dark reddish brown silty clay loam

Subsoil:
6 to 45 inches—dark red silty clay; black iron-manganese concretions
45 to 62 inches—dark red clay; black iron-manganese concretions

Minor Components

- Carbo, Chiswell, and Litz soils, which are shallower to bedrock than the Austinville soil; in similar landform positions
- Groseclose soils, which have a strong brown subsoil; in landform positions similar to those of the Austinville soil
- Areas of limestone outcrops that are scattered throughout the map unit

Soil Properties and Qualities

Available water capacity: Moderate (about 8.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from dolomitic limestone and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- Clods may form if the soil is tilled when wet.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- Shrinking and swelling of the soil may crack foundations and basement walls.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- This soil is well suited to septic tank absorption fields.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: O
Hydric soil: No

1C—Austinville silty clay loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Smooth, broad summits, and shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Austinville and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 6 inches—dark reddish brown silty clay loam

Subsoil:
6 to 45 inches—dark red silty clay; black iron-manganese concretions
45 to 62 inches—dark red clay; black iron-manganese concretions

Minor Components

- Carbo, Chiswell, Litz, and Groseclose soils, which are shallower to bedrock than the Austinville soil; in similar landform positions
- Groseclose soils, which have a strong brown subsoil; in landform positions similar to those of the Austinville soil
- Small areas of limestone outcrops that are scattered throughout the map unit

Soil Properties and Qualities

Available water capacity: Moderate (about 8.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from dolomitic limestone and shale

Use and Management Considerations

Cropland

Suitability: Well suited to wheat and grass-legume hay; moderately suited to corn, soybeans, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- Clods may form if the soil is tilled when wet.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative

impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: O
Hydric soil: No

1D—Austinville silty clay loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Austinville and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 6 inches—dark reddish brown silty clay loam

Subsoil:
6 to 45 inches—dark red silty clay; black iron-manganese concretions
45 to 62 inches—dark red clay; black iron-manganese concretions

Minor Components

- Carbo, Chiswell, and Litz soils, which are shallower to bedrock than the Austinville soil; in similar landform positions
- Groseclose soils, which have a strong brown subsoil; in landform positions similar to those of the Austinville soil

- Tumbling soils, which formed in colluvium; on the lower backslopes or on footslopes
- Areas of limestone outcrops that are scattered throughout the map unit

Soil Properties and Qualities

Available water capacity: Moderate (about 8.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from dolomitic limestone and shale

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- Clods may form if the soil is tilled when wet.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.

- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: O
Hydric soil: No

1E—Austinville silty clay loam, 25 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Austinville and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 6 inches—dark reddish brown silty clay loam

Subsoil:
6 to 45 inches—dark red silty clay; black iron-manganese concretions
45 to 62 inches—dark red clay; black iron-manganese concretions

Minor Components

- Carbo, Chiswell, and Litz soils, which are shallower to bedrock than the Austinville soil; in similar landform positions
- Groseclose soils, which have a strong brown subsoil; in landform positions similar to those of the Austinville soil
- Tumbling soils, which formed in colluvium; on the lower backslopes or on footslopes
- Areas of limestone outcrops that are scattered throughout the map unit

Soil Properties and Qualities

Available water capacity: Moderate (about 8.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet

Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from dolomitic limestone and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.

Woodland

Suitability: Well suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e

Virginia soil management group: O
Hydric soil: No

2E—Austinville-Rock outcrop complex, 10 to 45 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Note: This Austinville soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Austinville and similar soils: Typically 45 percent, ranging from about 35 to 50 percent
Rock outcrop: Typically 30 percent, ranging from about 25 to 50 percent

Typical Profile

Austinville

Surface layer:
0 to 6 inches—dark reddish brown silty clay loam

Subsoil:
6 to 45 inches—dark red silty clay; black iron-manganese concretions
45 to 62 inches—dark red clay; black iron-manganese concretions

Rock outcrop

This part of the map unit consists of outcrops of hard dolomitic limestone bedrock that are about 10 to 30 feet apart.

Minor Components

- Carbo, Chiswell, and Litz soils, which are shallower to bedrock than the Austinville soil; in similar landform positions
- Groseclose soils, which have a strong brown subsoil; in landform positions similar to those of the Austinville soil
- Tumbling soils, which formed in colluvium; on the lower backslopes or on footslopes

Properties and Qualities of the Austinville Soil

Available water capacity: Moderate (about 8.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from dolomitic limestone and shale

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pasture.

Woodland

Suitability: Moderately suited to northern red oak

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- Bedrock may interfere with the construction of haul roads and log landings.
- The depth to hard bedrock restricts the use of equipment during site preparation for planting or seeding and interferes with mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Austinville—7s; Rock outcrop—8s
Virginia soil management group: Austinville—O; Rock outcrop—none assigned
Hydric soils: No

3D—Berks-Weikert complex, 15 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Note: These Berks and Weikert soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Berks and similar soils: Typically 40 percent, ranging from about 30 to 50 percent
Weikert and similar soils: Typically 35 percent, ranging from about 25 to 45 percent

Typical Profile

Berks

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 5 inches—brown very channery silt loam

Subsoil:
5 to 15 inches—yellowish brown channery silt loam
15 to 26 inches—brownish yellow very channery silt loam

Substratum:
26 to 28 inches—strong brown extremely channery silt loam

Hard bedrock:
28 inches—shale bedrock

Weikert

Surface layer:
0 to 2 inches—dark yellowish brown very channery silt loam

Subsoil:
2 to 12 inches—yellowish brown extremely channery silt loam

Hard bedrock:
12 inches—shale bedrock

Minor Components

- Lily soils and soils that have more clay in the subsoil than the Berks and Weikert soils; on summits, shoulders, and backslopes
- Shelocta soils, which formed in colluvium on footslopes
- Some areas of soils on slopes of less than 15 percent

Soil Properties and Qualities

Available water capacity: Berks—very low (about 2.7 inches); Weikert—very low (about 0.4 inch)
Slowest saturated hydraulic conductivity: Berks—moderately high (about 0.6 in/hr); Weikert—high (about 2.0 in/hr)
Depth class: Berks—moderately deep (20 to 40 inches); Weikert—shallow (10 to 20 inches)
Depth to root-restrictive feature: Berks—20 to 40 inches to bedrock (lithic); Weikert—10 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from shale interbedded with siltstone and from sandstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: JJ
Hydric soils: No

4B—Botetourt loam, 2 to 7 percent slopes, rarely flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Stream terraces
Position on the landform: Treads
Size of areas: 5 to 100 acres

Map Unit Composition

Botetourt and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 7 inches—dark yellowish brown loam

Subsoil:
7 to 18 inches—yellowish brown loam
18 to 37 inches—yellowish brown clay loam; gray iron depletions
37 to 48 inches—yellowish brown gravelly loam; light gray iron depletions

Substratum:
48 to 62 inches—yellowish brown gravelly loam; light gray iron depletions

Minor Components

- Frederick soils, which have more clay in the subsoil than the Botetourt soil; on backslopes of hills
- Well drained Ingledove soils, which are in convex positions slightly higher than those of the Botetourt soil
- Well drained Wolfgap soils, which are subject to more frequent flooding than the Botetourt soil; on the lower landforms
- Somewhat poorly drained to very poorly drained soils that are in concave positions slightly lower than those of the Botetourt soil
- Small areas of soils that have a gravelly or cobbly surface layer

Soil Properties and Qualities

Available water capacity: Moderate (about 8.7 inches)

Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Moderately well drained
Depth to seasonal water saturation: About 18 to 30 inches
Water table kind: Apparent
Flooding hazard: Rare
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: None
Parent material: Alluvium derived from limestone, shale, quartzite, and sandstone

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root system of winter grain crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- Soil wetness may limit the use of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding is a limitation affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- The low soil strength may cause structural damage to local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland

Land capability class: 2e
Virginia soil management group: G
Hydric soil: No

4C—Botetourt loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Stream terraces
Position on the landform: Risers
Size of areas: 5 to 75 acres

Map Unit Composition

Botetourt and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 7 inches—dark yellowish brown loam

Subsoil:
7 to 18 inches—yellowish brown loam
18 to 37 inches—yellowish brown clay loam; gray iron depletions
37 to 48 inches—yellowish brown gravelly loam; light gray iron depletions

Substratum:
48 to 62 inches—yellowish brown gravelly loam; light gray iron depletions

Minor Components

- Frederick soils, which have more clay in the subsoil than the Botetourt soil; on the backslopes of hills
- Well drained Ingledove soils that are in convex positions slightly higher than those of the Botetourt soil
- Well drained Wolfgap soils that are subject to flooding; on landscapes lower than those of the Botetourt soil
- Somewhat poorly drained to very poorly drained soils that are in concave positions slightly lower than those of the Botetourt soil
- Small areas of soils that have a gravelly or cobbly surface layer

Soil Properties and Qualities

Available water capacity: Moderate (about 8.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Moderately well drained
Depth to seasonal water saturation: About 18 to 30 inches
Water table kind: Apparent
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: None
Parent material: Alluvium derived from limestone, shale, quartzite, and sandstone

Use and Management Considerations

Cropland

Suitability: Well suited to soybeans, wheat, and grass-legume hay; moderately suited to corn; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root system of winter grain crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: G
Hydric soil: No

5E—Brushy extremely gravelly loam, 25 to 65 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains

Position on the landform: Backslopes
Size of areas: 5 to more than 100 acres
Note: Boulders are common in drainageways

Map Unit Composition

Brushy and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 2 inches—moderately decomposed plant material

Surface layer:
2 to 7 inches—dark yellowish brown extremely gravelly loam

Subsurface layer:
7 to 13 inches—pale brown very gravelly loam

Subsoil:
13 to 27 inches—yellowish brown very gravelly clay loam
27 to 34 inches—brown very gravelly clay loam

Hard bedrock:
34 inches—chert bedrock

Minor Components

- Berks, Calvin, Drypond, and Lily soils, which do not have chert fragments; in landform positions similar to those of the Brushy soil
- Laidig and Tumbling soils, which formed in colluvium on footslopes and at the heads of drainageways
- Areas of soils that have an extremely stony or rubbly surface layer, areas of rock outcrops, and some areas of soils that have slopes of less than 25 percent

Soil Properties and Qualities

Available water capacity: Very low (about 1.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: None
Parent material: Residuum weathered from chert or cherty limestone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Moderately suited to northern red oak

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soil: No

6E—Calvin channery silt loam, 25 to 65 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains
Position on the landform: Backslopes
Size of areas: 5 to 300 acres

Map Unit Composition

Calvin and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 5 inches—dark reddish brown channery silt loam

Subsoil:
5 to 10 inches—reddish brown channery silt loam
10 to 22 inches—reddish brown very channery silt loam

Substratum:
22 to 28 inches—reddish brown extremely channery silt loam

Hard bedrock:
28 inches—shale bedrock

Minor Components

- Berks, Drypond, Lily, and Weikert soils and some areas of soils that have more clay in the subsoil than the Calvin soil and are yellowish brown; in positions similar to those of the Calvin soil
- Shelocta soils, which formed in colluvium on footslopes
- Some areas of soils that have slopes of less than 25 percent

Soil Properties and Qualities

Available water capacity: Very low (about 3.0 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from red noncalcareous shale interbedded with siltstone and sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.

- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soil: No

7C—Carbo silty clay loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills (fig. 3)
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 50 acres
Note: Sinkholes are common in some areas

Map Unit Composition

Carbo and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 5 inches—brown silty clay loam

Subsoil:
5 to 24 inches—brown clay; black manganese masses

Hard bedrock:
24 inches—limestone bedrock

Minor Components

- Frederick soils, which are very deep; in positions similar to those of the Carbo soil
- Newbern and Wurno soils, which have more rock fragments than the Carbo soil; in similar positions

Figure 3.—A typical farmstead in Rich Valley. A pasture on Carbo silty clay loam, 7 to 15 percent slopes, is in the foreground. In the background, at the base of Walker Mountain, an area of Tumbling loam, 7 to 15 percent slopes, lies below an area of Newbern-Westmoreland complex, 25 to 65 percent slopes.

- Timberville soils, which are very deep; in drainageways and on concave footslopes
- Areas of rock outcrops and soils that are shallow to bedrock

Soil Properties and Qualities

Available water capacity: Low (about 3.0 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, soybeans, wheat, and grass-legume hay; not suited to alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock and high clay content restrict the rooting depth of crops.
- The limited available water capacity may cause plants to suffer from moisture stress.
- Clods may form if the soil is tilled when wet.

- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: Y
Hydric soil: No

7D—Carbo silty clay loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Size of areas: 5 to 50 acres
Note: Sinkholes are common in some areas

Map Unit Composition

Carbo and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 5 inches—brown silty clay loam

Subsoil:
5 to 24 inches—brown clay; black manganese masses

Hard bedrock:
24 inches—limestone bedrock

Minor Components

- Frederick soils, which are very deep; in positions similar to those of the Carbo soil
- Newbern and Wurno soils, which have more rock fragments than the Carbo soil; in similar positions
- Timberville soils, which are very deep; in drainageways and on concave footslopes
- Small areas of rock outcrops and soils that are shallow to bedrock

Soil Properties and Qualities

Available water capacity: Low (about 3.0 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Very high
Surface fragments: None
Parent material: Residuum weathered from limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to wheat and grass-legume hay; poorly suited to corn; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock and high clay content restrict the rooting depth of crops.
- The limited available water capacity may cause plants to suffer from moisture stress.
- Clods may form if the soil is tilled when wet.
- The risk of compaction increases when the soil is wet.

- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Figure 4.—A pasture on Carbo-Rock outcrop complex, 7 to 25 percent slopes. Rock outcrops in this map unit limit urban uses and most agricultural uses other than pasture.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: Y
Hydric soil: No

8D—Carbo-Rock outcrop complex, 7 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills (fig. 4)
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Note: This Carbo soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 45 percent, ranging from about 35 to 55 percent
Rock outcrop: Typically 30 percent, ranging from about 10 to 40 percent

Typical Profile

Carbo

Surface layer:
0 to 5 inches—brown silty clay loam

Subsoil:
5 to 24 inches—brown clay; black manganese masses

Hard bedrock:
24 inches—limestone bedrock

Rock outcrop

This part of the map unit consists of areas of outcrops of hard limestone bedrock that are about 15 to 75 feet apart.

Minor Components

- Frederick soils, which are very deep; in positions similar to those of the Carbo soil
- Newbern and Wurno soils, which have more rock fragments than the Carbo soil; in similar positions
- Timberville soils, which are very deep; in drainageways and on concave footslopes
- Small areas of soils that are shallow to bedrock; scattered throughout the map unit

Properties and Qualities of the Carbo Soil

Available water capacity: Low (about 3.0 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pasture.

Woodland

Suitability: Moderately suited to eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.

- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Carbo—7s; Rock outcrop—8s
Virginia soil management group: Carbo—Y; Rock outcrop—none assigned
Hydric soils: No

8E—Carbo-Rock outcrop complex, 25 to 65 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Note: This Carbo soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 45 percent, ranging from about 35 to 55 percent
Rock outcrop: Typically 30 percent, ranging from about 10 to 40 percent

Typical Profile

Carbo

Surface layer:
0 to 5 inches—brown silty clay loam

Subsoil:
5 to 24 inches—brown clay; black manganese masses

Hard bedrock:
24 inches—limestone bedrock

Rock outcrop

This part of the map unit consists of areas of outcrops of hard limestone bedrock that are about 15 to 75 feet apart.

Minor Components

- Frederick soils, which are very deep; in positions similar to those of the Carbo soil
- Newbern and Wurno soils, which have more rock fragments than the Carbo soil; in similar positions
- Timberville soils, which are very deep; in drainageways and on concave footslopes
- Small areas of soils that are shallow to bedrock; scattered throughout the map unit

Properties and Qualities of the Carbo Soil

Available water capacity: Low (about 3.0 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Very high
Surface fragments: None
Parent material: Residuum weathered from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pasture.

Woodland

Suitability: Moderately suited to eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber

harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Carbo—7s; Rock outcrop—8s
Virginia soil management group: Carbo—Y; Rock outcrop—none assigned
Hydric soils: No

9E—Carbo-Rock outcrop complex, 7 to 65 percent slopes, karst

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills with karst topography

Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to more than 100 acres
Note: Numerous sinkholes occur in areas of this map unit

Map Unit Composition

Note: This Carbo soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Carbo and similar soils: Typically 45 percent, ranging from about 35 to 55 percent
Rock outcrop: Typically 30 percent, ranging from about 10 to 40 percent

Typical Profile

Carbo

Surface layer:
0 to 5 inches—brown silty clay loam

Subsoil:
5 to 24 inches—brown clay; black manganese masses

Hard bedrock:
24 inches—limestone bedrock

Rock outcrop

This part of the map unit consists of outcrops of hard limestone bedrock that are about 15 to 75 feet apart.

Minor Components

- Frederick soils, which are very deep; in positions similar to those of the Carbo soil
- Newbern and Wurno soils, which have more rock fragments than the Carbo soil; in similar positions
- Timberville soils, which are very deep; in drainageways and on concave footslopes
- Small areas of soils that are shallow to bedrock; scattered throughout the map unit

Properties and Qualities of the Carbo Soil

Available water capacity: Low (about 3.0 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Very high
Surface fragments: None
Parent material: Residuum weathered from limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pasture.

Woodland

Suitability: Moderately suited to eastern white pine

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil increases the difficulty of constructing haul roads and log landings when the soil is wet, reduces the efficiency of mechanical planting equipment, and restricts the use of equipment for site preparation to the drier periods.

Building sites

- Because of the potential for sinkhole collapse, building site development in karst areas is not recommended.

Septic tank absorption fields

- Sinkholes (karst areas) increase the potential for ground-water contamination from the effluent from conventional septic systems; septic systems should not be placed near sinkholes.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.
- Collapsing sinkholes may damage local roads and streets.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Carbo—7s; Rock outcrop—8s
Virginia soil management group: Carbo—Y; Rock outcrop—none assigned
Hydric soils: No

10C—Chiswell-Litz-Groseclose complex, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Summits and shoulders
Size of areas: 5 to 100 acres
Note: The bedrock strata underlying the soils in this map unit consist of chemically and physically heterogeneous shale, limestone, and sandstone that are very thinly bedded (2 to 10 feet thick). The bedrock strata were tilted to vertical and truncated during mountain formation. Each layer of bedrock has weathered at a different rate, resulting in marked horizontal changes within a few feet in the soil. Depth to bedrock ranges from 10 to more than 60 inches, and texture ranges from very channery silt loam to clay.

Map Unit Composition

Note: These Chiswell, Litz, and Groseclose soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Chiswell and similar soils: Typically 30 percent, ranging from about 20 to 40 percent
Litz and similar soils: Typically 25 percent, ranging from about 15 to 35 percent
Groseclose and similar soils: Typically 20 percent, ranging from about 15 to 25 percent

Typical Profile

Chiswell

Surface layer:
0 to 4 inches—dark reddish brown channery silt loam

Subsurface layer:
4 to 8 inches—dark reddish brown channery silt loam

Subsoil:
8 to 12 inches—reddish brown very channery silt loam
12 to 17 inches—reddish brown extremely channery silt loam

Soft bedrock:
17 inches—shale bedrock

Litz

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 12 inches—strong brown and yellowish brown channery silt loam and silty clay loam

Substratum:
12 to 24 inches—yellowish brown, olive gray, and strong brown extremely channery silt loam and silty clay loam

Soft bedrock:
24 to 36 inches—gray, olive gray, and weak red bedrock

Hard bedrock:
36 inches—gray, olive gray, and weak red bedrock

Groseclose

Surface layer:
0 to 9 inches—yellowish brown silt loam

Subsoil:
9 to 32 inches—strong brown clay
32 to 54 inches—strong brown silty clay

Substratum:
54 to 62 inches—strong brown silty clay loam; manganese coatings

Minor Components

- Austinville and Carbo soils, which formed in limestone; in landform positions similar to those of the Chiswell, Litz, and Groseclose soils
- Shelocta soils, which formed in colluvium on footslopes
- Timberville soils, which formed on concave footslopes and in drainageways in colluvium and alluvium derived from limestone, shale, and sandstone
- Small areas of rock outcrops and soils that have a stony surface layer

Soil Properties and Qualities

Available water capacity: Chiswell—very low (about 1.9 inches); Litz—very low (about 2.3 inches); Groseclose—moderate (about 7.7 inches)
Slowest saturated hydraulic conductivity: Chiswell and Litz—moderately high (about 0.6 in/hr); Groseclose—moderately low (about 0.06 in/hr)
Depth class: Chiswell—shallow (10 to 20 inches); Litz—moderately deep (20 to 40 inches); Groseclose—very deep (more than 60 inches)
Depth to root-restrictive feature: Chiswell—10 to 20 inches to bedrock (paralithic); Litz—20 to 40 inches to bedrock (paralithic and lithic); Groseclose—more than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Chiswell and Litz—low; Groseclose—high
Runoff class: Chiswell and Litz—medium; Groseclose—high
Surface fragments: None
Parent material: Chiswell—residuum weathered from shale, siltstone, and fine-grained sandstone; Litz—residuum weathered from calcareous shale and limestone; Groseclose—residuum derived from shale, siltstone, limestone, and fine-grained sandstone

Use and Management Considerations

Cropland

Suitability: Moderately suited to wheat and grass-legume hay; poorly suited to corn and soybeans; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock and high clay content restrict the rooting depth of crops.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Chiswell—4s; Litz and Groseclose—3e
Virginia soil management group: Chiswell and Litz—JJ; Groseclose—M
Hydric soils: No

10D—Chiswell-Litz-Groseclose complex, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Shoulders and backslopes
Size of areas: 5 to 100 acres
Note: The bedrock strata underlying the soils in this map unit consist of chemically and physically heterogeneous shale, limestone, and sandstone that are very thinly bedded (2 to 10 feet thick). The bedrock strata were tilted to vertical and truncated during mountain formation. Each layer of bedrock has weathered at a different

rate, resulting in marked horizontal changes within a few feet in the soil. Depth to bedrock ranges from 10 to more than 60 inches, and texture ranges from very channery silt loam to clay.

Map Unit Composition

Note: These Chiswell, Litz, and Groseclose soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Chiswell and similar soils: Typically 30 percent, ranging from about 20 to 40 percent
Litz and similar soils: Typically 25 percent, ranging from about 15 to 35 percent
Groseclose and similar soils: Typically 20 percent, ranging from about 15 to 25 percent

Typical Profile

Chiswell

Surface layer:
0 to 4 inches—dark reddish brown channery silt loam

Subsurface layer:
4 to 8 inches—dark reddish brown channery silt loam

Subsoil:
8 to 12 inches—reddish brown very channery silt loam
12 to 17 inches—reddish brown extremely channery silt loam

Soft bedrock:
17 inches—shale bedrock

Litz

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 12 inches—strong brown and yellowish brown channery silt loam and silty clay loam

Substratum:
12 to 24 inches—yellowish brown, olive gray, and strong brown extremely channery silt loam and silty clay loam

Soft bedrock:
24 to 36 inches—gray, olive gray, and weak red bedrock

Hard bedrock:
36 inches—gray, olive gray, and weak red bedrock

Groseclose

Surface layer:
0 to 9 inches—yellowish brown silt loam

Subsoil:
9 to 32 inches—strong brown clay

Subsoil:
32 to 54 inches—strong brown silty clay

Substratum:
54 to 62 inches—strong brown silty clay loam; manganese coatings

Minor Components

- Austinville and Carbo soils, which formed in limestone; in landform positions similar to those of the Chiswell, Litz, and Groseclose soils
- Shelocta soils, which formed in colluvium on footslopes
- Timberville soils, which formed on concave footslopes and in drainageways in colluvium and alluvium derived from limestone, shale, and sandstone
- Small areas of rock outcrops and soils that have a stony surface layer

Soil Properties and Qualities

Available water capacity: Chiswell—very low (about 1.9 inches); Litz—very low (about 2.3 inches); Groseclose—moderate (about 7.7 inches)
Slowest saturated hydraulic conductivity: Chiswell and Litz—moderately high (about 0.6 in/hr); Groseclose—moderately low (about 0.06 in/hr)
Depth class: Chiswell—shallow (10 to 20 inches); Litz—moderately deep (20 to 40 inches); Groseclose—very deep (more than 60 inches)
Depth to root-restrictive feature: Chiswell—10 to 20 inches to bedrock (paralithic); Litz—20 to 40 inches to bedrock (paralithic and lithic); Groseclose—more than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Chiswell and Litz—low; Groseclose—high
Runoff class: Chiswell and Litz—high; Groseclose—very high
Surface fragments: None
Parent material: Chiswell—residuum weathered from shale, siltstone, and fine-grained sandstone; Litz—residuum weathered from calcareous shale and limestone; Groseclose—residuum derived from shale, siltstone, limestone, and fine-grained sandstone

Use and Management Considerations

Cropland

Suitability: Poorly suited to corn, wheat, and grass-legume hay; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock and high clay content restrict the rooting depth of crops.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.

- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: Chiswell and Litz—JJ; Groseclose—M
Hydric soils: No

10E—Chiswell-Litz-Groseclose complex, 25 to 65 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Backslopes
Size of areas: 5 to 100 acres
Note: The bedrock strata underlying the soils in this map unit consist of chemically and physically heterogeneous shale, limestone, and sandstone that are very thinly bedded (2 to 10 feet thick). The bedrock strata were tilted to vertical and truncated during mountain formation. Each layer of bedrock has weathered at a different rate, resulting in marked horizontal changes within a few feet in the soil. Depth to bedrock ranges from 10 to more than 60 inches, and texture ranges from very channery silt loam to clay.

Map Unit Composition

Note: These Chiswell, Litz, and Groseclose soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Chiswell and similar soils: Typically 30 percent, ranging from about 20 to 40 percent
Litz and similar soils: Typically 25 percent, ranging from about 15 to 35 percent
Groseclose and similar soils: Typically 20 percent, ranging from about 15 to 25 percent

Typical Profile

Chiswell

Surface layer:
0 to 4 inches—dark reddish brown channery silt loam

Subsurface layer:
4 to 8 inches—dark reddish brown channery silt loam

Subsoil:
8 to 12 inches—reddish brown very channery silt loam
12 to 17 inches—reddish brown extremely channery silt loam

Soft bedrock:
17 inches—shale bedrock

Litz

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 12 inches—strong brown and yellowish brown channery silt loam and silty clay loam

Substratum:
12 to 24 inches—yellowish brown, olive gray, and strong brown extremely channery silt loam and silty clay loam

Soft bedrock:
24 to 36 inches—gray, olive gray, and weak red bedrock

Hard bedrock:
36 inches—gray, olive gray, and weak red bedrock

Groseclose

Surface layer:
0 to 9 inches—yellowish brown silt loam

Subsoil:
9 to 32 inches—strong brown clay
32 to 54 inches—strong brown silty clay

Substratum:
54 to 62 inches—strong brown silty clay loam; manganese coatings

Minor Components

- Austinville and Carbo soils, which formed in limestone; in landform positions similar to those of the Chiswell, Litz, and Groseclose soils
- Shelocta soils, which formed in colluvium on footslopes

- Timberville soils, which formed on concave footslopes and in drainageways in colluvium and alluvium derived from limestone, shale, and sandstone
- Small areas of rock outcrops and soils that have a stony surface layer

Soil Properties and Qualities

Available water capacity: Chiswell—very low (about 1.9 inches); Litz—very low (about 2.3 inches); Groseclose—moderate (about 7.7 inches)
Slowest saturated hydraulic conductivity: Chiswell and Litz—moderately high (about 0.6 in/hr); Groseclose—moderately low (about 0.06 in/hr)
Depth class: Chiswell—shallow (10 to 20 inches); Litz—moderately deep (20 to 40 inches); Groseclose—very deep (more than 60 inches)
Depth to root-restrictive feature: Chiswell—10 to 20 inches to bedrock (paralithic); Litz—20 to 40 inches to bedrock (paralithic and lithic); Groseclose—more than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Chiswell and Litz—low; Groseclose—high
Runoff class: Chiswell and Litz—high; Groseclose—very high
Surface fragments: None
Parent material: Chiswell—residuum weathered from shale, siltstone, and fine-grained sandstone; Litz—residuum weathered from calcareous shale and limestone; Groseclose—residuum derived from shale, siltstone, limestone, and fine-grained sandstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pasture.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment and restricts the use of equipment for site preparation to the drier periods.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is

reduced and the difficulty of constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Chiswell and Litz—JJ; Groseclose—M
Hydric soils: No

11D—Dekalb channery sandy loam, 15 to 25 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains
Position on the landform: Shoulders and backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Dekalb and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 5 inches—very dark grayish brown channery sandy loam

Subsoil:
5 to 24 inches—yellowish brown very channery sandy loam

Substratum:
24 to 31 inches—yellowish brown extremely channery sandy loam

Hard bedrock:
31 inches—sandstone bedrock

Minor Components

- Berks soils, which formed in residuum derived mainly from shale; in positions similar to those of the Dekalb soil
- Drypond soils, which are shallow; on summits and shoulders of narrow mountain ridges
- Laidig and Tumbling soils, which are very deep; on colluvial footslopes
- Soils that have a very stony or rubbly surface layer
- Small areas of rock outcrops that occur in some map unit delineations

Soil Properties and Qualities

Available water capacity: Very low (about 1.8 inches)
Slowest saturated hydraulic conductivity: High (about 6.0 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 3.0 to 15.0 percent subrounded stones
Parent material: Residuum weathered from sandstone and quartzite

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Moderately suited to chestnut oak; poorly suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- The volume of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment and restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: FF
Hydric soil: No

11E—Dekalb channery sandy loam, 25 to 80 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains
Position on the landform: Backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Dekalb and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 5 inches—very dark grayish brown channery sandy loam

Subsoil:
5 to 24 inches—yellowish brown very channery sandy loam

Substratum:
24 to 31 inches—yellowish brown extremely channery sandy loam

Hard bedrock:
31 inches—sandstone bedrock

Minor Components

- Berks soils, which formed in residuum derived mainly from shale; in positions similar to those of the Dekalb soil

- Drypond soils, which are shallow; on summits and shoulders of narrow mountain ridges
- Laidig and Tumbling soils, which are very deep; on colluvial footslopes
- Soils that have a very stony or rubbly surface layer
- Small areas of rock outcrops that occur in some delineations

Soil Properties and Qualities

Available water capacity: Very low (about 1.8 inches)
Slowest saturated hydraulic conductivity: High (about 6.0 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 3.0 to 15.0 percent subrounded stones
Parent material: Residuum weathered from sandstone and quartzite

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Moderately suited to chestnut oak; poorly suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- The volume of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment and restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: FF
Hydric soil: No

12B—Derroc cobbly sandy loam, 0 to 5 percent slopes, occasionally flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains
Position on the landform: Treads
Size of areas: 5 to 50 acres

Map Unit Composition

Derroc and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 8 inches—dark yellowish brown cobbly sandy loam

Subsoil:
8 to 35 inches—yellowish brown very cobbly sandy loam

Substratum:
35 to 62 inches—yellowish brown extremely cobbly loamy sand

Minor Components

- Botetourt, Ingledove, and Wheeling soils, which have fewer rock fragments than the Derroc soil; on stream terraces
- Tumbling soils, which have fewer rock fragments than the Derroc soil; on footslopes

Soil Properties and Qualities

Available water capacity: Low (about 4.2 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained

Depth to seasonal water saturation: More than 6 feet
Flooding hazard: Occasional
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very low
Surface fragments: None
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite

Use and Management Considerations

Cropland

Suitability: Moderately suited to wheat and grass-legume hay; poorly suited to corn and soybeans; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The limited available water capacity may cause plants to suffer from moisture stress.
- Flooding may damage crops.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- Flooding may damage pastures.

Woodland

Suitability: Well suited to northern red oak; moderately suited to yellow-poplar and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside management zones and stream crossings and should include general adherence to all applicable Best Management Practices (BMPs).
- Flooding may damage haul roads and restricts the safe use of log trucks.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.

Building sites

- Flooding is a limitation affecting building site development.

Septic tank absorption fields

- Flooding is a limitation affecting septic tank absorption fields.

Local roads and streets

- Flooding may damage local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 2s
Virginia soil management group: CC
Hydric soil: No

13D—Drypond-Rock outcrop complex, 15 to 35 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains
Position on the landform: Shoulders and backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Note: This Drypond soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Drypond and similar soils: Typically 45 percent, ranging from about 35 to 55 percent
Rock outcrop: Typically 30 percent, ranging from about 20 to 40 percent

Typical Profile

Drypond

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 5 inches—brown very gravelly sandy loam

Subsoil:
5 to 13 inches—yellowish brown very gravelly sandy loam

Substratum:
13 to 18 inches—yellowish brown extremely gravelly sandy loam

Hard bedrock:
18 inches—quartzite bedrock

Rock outcrop

This part of the map unit consists of areas of outcrops of hard sandstone or quartzite bedrock that are about 10 to 50 feet apart.

Minor Components

- Brushy, Calvin, Dekalb, and Lily soils, which are deeper to bedrock than the Drypond soil; in similar positions
- Rubbly or bouldery areas

Properties and Qualities of the Drypond Soil

Available water capacity: Very low (about 0.9 inches)
Slowest saturated hydraulic conductivity: High (about 6.0 in/hr)
Depth class: Shallow (10 to 20 inches)
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Drainage class: Excessively drained

Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 3.0 to 15.0 percent subrounded stones
Parent material: Residuum weathered from sandstone and quartzite

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pasture.

Woodland

Suitability: Moderately suited to chestnut oak; poorly suited to northern red oak

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- The volume of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments on the surface interfere with the use of site preparation equipment and restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Drypond—7s; Rock outcrop—8s
Virginia soil management group: Drypond—JJ; Rock outcrop—none assigned
Hydric soils: No

13E—Drypond-Rock outcrop complex, 35 to 80 percent slopes, extremely stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains
Position on the landform: Backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Note: This Drypond soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Drypond and similar soils: Typically 45 percent, ranging from about 35 to 55 percent
Rock outcrop: Typically 30 percent, ranging from about 20 to 40 percent

Typical Profile

Drypond

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 5 inches—brown very gravelly sandy loam

Subsoil:
5 to 13 inches—yellowish brown very gravelly sandy loam

Substratum:
13 to 18 inches—yellowish brown extremely gravelly sandy loam

Hard bedrock:
18 inches—quartzite bedrock

Rock outcrop

This part of the map unit consists of outcrops of hard sandstone or quartzite bedrock that are about 10 to 50 feet apart.

Minor Components

- Brushy, Calvin, Dekalb, and Lily soils, which are deeper to bedrock than the Drypond soil; in similar positions
- Rubbly or bouldery areas

Properties and Qualities of the Drypond Soil

Available water capacity: Very low (about 0.9 inch)
Slowest saturated hydraulic conductivity: High (about 6.0 in/hr)
Depth class: Shallow (10 to 20 inches)
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Drainage class: Excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 3.0 to 15.0 percent subrounded stones
Parent material: Residuum weathered from sandstone and quartzite

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pasture.

Woodland

Suitability: Moderately suited to chestnut oak; poorly suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- The volume of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments on the surface interfere with the use of site preparation equipment and restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly

reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Drypond—7s; Rock outcrop—8s
Virginia soil management group: Drypond—JJ; Rock outcrop—none assigned
Hydric soils: No

14—Dumps, mines

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Upland dumps
Size of areas: 2 to 75 acres

Map Unit Composition

Dumps: Typically 100 percent, ranging from about 90 to 100 percent

Typical Profile

This map unit consists of dumps for refuse from strip mining and open-pit mining for barite, iron ore, lead ore, manganese, and zinc ore. The dumps, which are scattered throughout the county, consist of mounds of bare soil and rock material of varying composition. Some vegetation grows in low-lying positions where soil has washed from surrounding areas. Because of the variability of the material, a typical profile is not given.

Use and Management Considerations

Onsite investigation is needed to determine the suitability of any area for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: None assigned
Virginia soil management group: None assigned
Hydric soils: No

15B—Frederick silt loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Broad summits and shoulders
Size of areas: 5 to 150 acres

Map Unit Composition

Frederick and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 18 inches—red silty clay
18 to 35 inches—red clay; strong brown mottles
35 to 51 inches—red clay; reddish yellow and strong brown mottles
51 to 72 inches—red clay; reddish yellow mottles

Minor Components

- Marbie, Timberville, and Wyrick soils, which formed in colluvium and alluvium in depressions and drainageways
- Soils that have a surface layer of gravelly silt loam, that have a yellower subsoil than the Frederick soil, or that have more sand throughout than the Frederick soil; in areas scattered throughout the map unit
- Areas of rock outcrops and sinkholes in some delineations

Soil Properties and Qualities

Available water capacity: Moderate (about 7.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from limestone interbedded with shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- This soil is well suited to septic tank absorption fields.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: M
Hydric soil: No

15C—Frederick silt loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Broad summits and shoulders
Size of areas: 5 to 150 acres

Map Unit Composition

Frederick and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 18 inches—red silty clay
18 to 35 inches—red clay; strong brown mottles
35 to 51 inches—red clay; reddish yellow and strong brown mottles
51 to 72 inches—red clay; reddish yellow mottles

Minor Components

- Marbie, Timberville, and Wyrick soils, which formed in colluvium and alluvium in depressions and drainageways
- Soils that have a surface layer of gravelly silt loam, that have a yellower subsoil than the Frederick soil, or that have more sand throughout than the Frederick soil; in areas scattered throughout the map unit
- Areas of rock outcrops and sinkholes in some delineations

Soil Properties and Qualities

Available water capacity: Moderate (about 7.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from limestone interbedded with shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Well suited to wheat and grass-legume hay; moderately suited to corn, soybeans, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: M
Hydric soil: No

15D—Frederick silt loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Size of areas: 5 to 150 acres

Map Unit Composition

Frederick and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 18 inches—red silty clay
18 to 35 inches—red clay; strong brown mottles
35 to 51 inches—red clay; reddish yellow and strong brown mottles
51 to 72 inches—red clay; reddish yellow mottles

Minor Components

- Marbie, Timberville, and Wyrick soils, which formed in colluvium and alluvium in depressions and drainageways
- Soils that have a surface layer of gravelly silt loam, that have a yellower subsoil than the Frederick soil, or that have more sand throughout than the Frederick soil; in areas scattered throughout the map unit
- Areas of rock outcrops and sinkholes in some delineations

Soil Properties and Qualities

Available water capacity: Moderate (about 7.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches

Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from limestone interbedded with shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: M
Hydric soil: No

15E—Frederick silt loam, 25 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Size of areas: 5 to more than 150 acres

Map Unit Composition

Frederick and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 18 inches—red silty clay
18 to 35 inches—red clay; strong brown mottles
35 to 51 inches—red clay; reddish yellow and strong brown mottles
51 to 72 inches—red clay; reddish yellow mottles

Minor Components

- Marbie, Timberville, and Wyrick soils, which formed in colluvium and alluvium in depressions and drainageways
- Soils that have a surface layer of gravelly silt loam, that have a yellower subsoil than the Frederick soil, or that have more sand throughout than the Frederick soil; in areas scattered throughout the map unit
- Areas of rock outcrops and sinkholes in some delineations

Soil Properties and Qualities

Available water capacity: Moderate (about 7.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High

Surface fragments: None
Parent material: Residuum weathered from limestone interbedded with shale, siltstone, and sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: M
Hydric soil: No

15F—Frederick silt loam, 35 to 60 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Size of areas: 5 to more than 150 acres

Map Unit Composition

Frederick and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 18 inches—red silty clay
18 to 35 inches—red clay; strong brown mottles
35 to 51 inches—red clay; reddish yellow and strong brown mottles
51 to 72 inches—red clay; reddish yellow mottles

Minor Components

- Marbie, Timberville, and Wyrick soils, which formed in colluvium and alluvium in depressions and drainageways
- Soils that have a surface layer of gravelly silt loam, that have a yellower subsoil than the Frederick soil, or that have more sand throughout than the Frederick soil; in areas scattered throughout the map unit
- Areas of rock outcrops and sinkholes in some delineations

Soil Properties and Qualities

Available water capacity: Moderate (about 7.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from limestone interbedded with shale, siltstone, and sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Moderately suited to northern red oak

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: M
Hydric soil: No

16B—Frederick gravelly silt loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Broad summits and shoulders
Size of areas: 5 to 150 acres

Map Unit Composition

Frederick and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 8 inches—brown gravelly silt loam

Subsoil:
8 to 18 inches—red silty clay
18 to 35 inches—red clay; strong brown mottles

35 to 51 inches—red clay; reddish yellow and strong brown mottles
51 to 72 inches—red clay; reddish yellow mottles

Minor Components

- Marbie, Timberville, and Wyrick soils, which formed in colluvium and alluvium in depressions and drainageways
- Poyner soils, which have more rock fragments than the Frederick soil; in similar landform positions
- Soils that have a surface layer of gravelly silt loam, that have a yellower subsoil than the Frederick soil, or that have more sand throughout than the Frederick soil; in areas scattered throughout the map unit
- Areas of rock outcrops and sinkholes in some delineations

Soil Properties and Qualities

Available water capacity: Moderate (about 6.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from limestone and/or cherty limestone interbedded with shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Well suited to wheat and grass-legume hay; moderately suited to corn, soybeans, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Figure 5.—An area of Frederick gravelly silt loam, 7 to 15 percent slopes, used in the production of grass-legume hay. The Newbern-Westmoreland complex, 25 to 65 percent slopes, is on the mountain slopes in the background.

Septic tank absorption fields

- This soil is well suited to septic tank absorption fields.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: M
Hydric soil: No

16C—Frederick gravelly silt loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills (figs. 5 and 6)
Position on the landform: Broad summits and shoulders
Size of areas: 5 to 150 acres

Map Unit Composition

Frederick and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Figure 6.—An area of Frederick gravelly silt loam, 7 to 15 percent slopes. This soil is used in the production of grass-legume hay and most other crops grown in the survey area. The Carbo-Rock outcrop complex, 7 to 25 percent slopes, in the center of this landscape is limited for most agricultural uses other than pasture.

Typical Profile

Surface layer:
0 to 8 inches—brown gravelly silt loam

Subsoil:
8 to 18 inches—red silty clay
18 to 35 inches—red clay; strong brown mottles
35 to 51 inches—red clay; reddish yellow and strong brown mottles
51 to 72 inches—red clay; reddish yellow mottles

Minor Components

- Marbie, Timberville, and Wyrick soils, which formed in colluvium and alluvium in depressions and drainageways
- Poyner soils, which have more rock fragments than the Frederick soil; in similar landform positions
- Soils that have a surface layer of gravelly silt loam, that have a yellower subsoil than the Frederick soil, or that have more sand throughout than the Frederick soil; in areas scattered throughout the map unit
- Areas of rock outcrops and sinkholes in some delineations

Soil Properties and Qualities

Available water capacity: Moderate (about 6.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)

Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from limestone and/or cherty limestone interbedded with shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: M
Hydric soil: No

16D—Frederick gravelly silt loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Size of areas: 5 to 150 acres

Map Unit Composition

Frederick and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 8 inches—brown gravelly silt loam

Subsoil:
8 to 18 inches—red silty clay
18 to 35 inches—red clay; strong brown mottles
35 to 51 inches—red clay; reddish yellow and strong brown mottles
51 to 72 inches—red clay; reddish yellow mottles

Minor Components

- Marbie, Timberville, and Wyrick soils, which formed in colluvium and alluvium in depressions and drainageways
- Poyner soil, which have more rock fragments than the Frederick soil; in similar landform positions
- Soils that have a surface layer of gravelly silt loam, that have a yellower subsoil than the Frederick soil, or that have more sand throughout than the Frederick soil; in areas scattered throughout the map unit
- Areas of rock outcrops and sinkholes in some delineations

Soil Properties and Qualities

Available water capacity: Moderate (about 6.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from limestone and/or cherty limestone interbedded with shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, wheat, grass-legume hay, and alfalfa hay; poorly suited to soybeans
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited

- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: M
Hydric soil: No

16E—Frederick gravelly silt loam, 25 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Size of areas: 5 to 150 acres

Map Unit Composition

Frederick and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 8 inches—brown gravelly silt loam

Subsoil:
8 to 18 inches—red silty clay
18 to 35 inches—red clay; strong brown mottles
35 to 51 inches—red clay; reddish yellow and strong brown mottles
51 to 72 inches—red clay; reddish yellow mottles

Minor Components

- Marbie, Timberville, and Wyrick soils, which formed in colluvium and alluvium in depressions and drainageways
- Poyner soils, which have more rock fragments than the Frederick soil; in similar landform positions
- Soils that have a surface layer of gravelly silt loam, that have a yellower subsoil than the Frederick soil, or that have more sand throughout the profile than the Frederick soil; in areas scattered throughout the map unit
- Areas of rock outcrops and sinkholes in some delineations

Soil Properties and Qualities

Available water capacity: Moderate (about 6.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from limestone and/or cherty limestone interbedded with shale, siltstone, and sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).

- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The low soil strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: M
Hydric soil: No

17C—Frederick-Urban land complex, 0 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Summits and shoulders
Size of areas: 5 to 500 acres
Note: Small areas of disturbed Frederick soils, which have been cut, filled, or graded, occur in some map unit delineations. In some areas as much as 30 feet of fill has been added or as much as 50 percent of the soil profile has been removed. In most areas the fill material is from surrounding areas of cut and graded Frederick soils. Some areas have short slopes of more than 15 percent and, in some delineations, areas of rock outcrops and sinkholes occur.

Map Unit Composition

Note: This Frederick soil and Urban land occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Frederick and similar soils: Typically 50 percent, ranging from about 40 to 60 percent
Urban land: Typically 30 percent, ranging from about 20 to 40 percent

Typical Profile

Frederick

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 18 inches—red silty clay
18 to 35 inches—red clay; strong brown mottles
35 to 51 inches—red clay; reddish yellow and strong brown mottles
51 to 72 inches—red clay; reddish yellow mottles

Urban land

This part of the map unit consists of land that is covered by highways, streets, parking lots, buildings, and other structures.

Minor Components

- Marbie, Timberville, and Wyrick soils, which formed in colluvium and alluvium in depressions and drainageways
- Soils that have a surface layer of gravelly silt loam or a loam surface layer about 15 inches thick; on the tops of low hills and in depressions
- Soils that have a yellower subsoil than the Frederick soil or that have more sand throughout than the Frederick soil; in areas scattered throughout the map unit

Properties and Qualities of the Frederick Soil

Available water capacity: Moderate (about 7.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from limestone interbedded with shale, siltstone, and sandstone

Use and Management Considerations

Onsite investigation is needed to determine the suitability of any area for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 8s
Virginia soil management group: Frederick—M; Urban land—none assigned
Hydric soils: No

18E—Greenlee very cobbly loam, 25 to 65 percent slopes, very stony

Setting

Major land resource area: Blue Ridge (MLRA 130)

Landform: Base of mountains, near Mount Rogers
Position on the landform: Lower backslopes and footslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Greenlee and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material
1 to 3 inches—moderately decomposed plant material

Surface layer:
3 to 9 inches—dark yellowish brown very cobbly loam

Subsoil:
9 to 50 inches—yellowish brown very cobbly loam

Substratum:
50 to 65 inches—yellowish brown very cobbly loam

Minor Components

- Derroc soils, which are on flood plains
- Konnarock soils, which formed in residuum on backslopes
- Tate soils, which have fewer rock fragments than the Greenlee soil; on footslopes
- Small areas of soils that are moderately well drained or that have a rubbly surface layer

Soil Properties and Qualities

Available water capacity: Moderate (about 7.8 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: About 0.1 to 3.0 percent subrounded stones
Parent material: Colluvium derived from rhyolite, quartz, and minor amounts of gneiss and granite

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Well suited to yellow-poplar; moderately suited to eastern white pine; poorly suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber

harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of rock fragments, excavation is difficult and cutbanks are unstable.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: CC
Hydric soil: No

19B—Ingledove loam, 2 to 7 percent slopes, rarely flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Stream terraces along the North Fork of the Holston River
Position on the landform: Treads
Size of areas: 5 to more than 100 acres

Map Unit Composition

Ingledove and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 42 inches—strong brown clay loam
42 to 57 inches—dark yellowish brown clay loam

Substratum:
57 to 62 inches—dark yellowish brown sandy clay loam

Minor Components

- Botetourt soils, which are moderately well drained; in concave positions that are slightly lower than those of the Ingledove soils
- Wolfgap soils, which have more organic matter in the upper part of the profile than the Ingledove soils and are subject to occasional flooding
- Areas of soils have a gravelly or cobbly surface layer or have slopes of less than 2 percent or more than 7 percent

Soil Properties and Qualities

Available water capacity: Moderate (about 8.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: Rare
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Alluvium derived from limestone, sandstone, siltstone, quartzite, and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding is a limitation affecting building site development.

Septic tank absorption fields

- This soil is well suited to septic tank absorption fields.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: A
Hydric soil: No

20B—Ingledove-Urban land complex, 2 to 7 percent slopes, rarely flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Stream terraces along the North Fork of the Holston River
Position on the landform: Treads
Size of areas: 5 to 250 acres
Note: Also included in this map unit are some small areas of disturbed Ingledove soils, which have been cut, filled, or graded. In some areas as much as 30 feet of fill has been added or as much as 50 percent of the soil profile has been removed. In most areas the fill material is from surrounding areas of cut and graded Ingledove soils.

Map Unit Composition

Note: This Ingledove soil and Urban land occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Ingledove and similar soils: Typically 50 percent, ranging from about 40 to 60 percent
Urban land: Typically 30 percent, ranging from about 20 to 40 percent

Typical Profile

Ingledove

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 42 inches—strong brown clay loam
42 to 57 inches—dark yellowish brown clay loam

Substratum:
57 to 62 inches—dark yellowish brown sandy clay loam

Urban land

This part of the map unit consists of land that has been covered by highways, streets, parking lots, buildings, and other structures.

Minor Components

- Botetourt soils, which are moderately well drained; in concave positions slightly lower than those of the Ingledove soil
- Wolfgap soils, which have more organic matter in the upper part of the profile than the Ingledove soil and are subject to occasional flooding
- Some areas of soils that have a gravelly or cobbly surface layer or that have slopes of less than 2 percent

Properties and Qualities of the Ingledove Soil

Available water capacity: Moderate (about 8.1 inches)

Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: Rare
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Alluvium derived from limestone, sandstone, siltstone, quartzite, and shale

Use and Management Considerations

Onsite investigation is needed to determine the suitability of any area for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 8s
Virginia soil management group: Ingledove—A; Urban land—none assigned
Hydric soils: No

21D—Konnarock very channery silt loam, 15 to 35 percent slopes

Setting

Major land resource area: Blue Ridge (MLRA 130)
Landform: Mountains, near Mount Rogers
Position on the landform: Backslopes
Size of areas: 5 to 50 acres

Map Unit Composition

Konnarock and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 2 inches—dark reddish brown and brown very channery silt loam

Subsoil:
2 to 23 inches—reddish brown and brown very channery silt loam

Substratum:
23 to 27 inches—reddish brown and brown extremely channery silt loam

Hard bedrock:
27 inches—tillite and rhythmite bedrock

Minor Components

- Greenlee soils, which formed in colluvium; on the lower backslopes or on footslopes
- Tate soils, which formed in colluvium and local alluvium; on toeslopes
- Areas of shallow to very deep soils that are yellower than the Konnarock soil or that have more clay in the subsoil or more sand than the Konnarock soil; in similar positions

- Some areas of soils that have slopes of less than 15 percent
- Areas of rock outcrops in some map unit delineations

Soil Properties and Qualities

Available water capacity: Very low (about 2.4 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: None
Parent material: Residuum weathered from tillite and rhythmite

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: JJ
Hydric soil: No

21E—Konnarock very channery silt loam, 35 to 65 percent slopes

Setting

Major land resource area: Blue Ridge (MLRA 130)
Landform: Mountains, near Mount Rogers
Position on the landform: Backslopes
Size of areas: 5 to 50 acres

Map Unit Composition

Konnarock and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 2 inches—dark reddish brown and brown very channery silt loam

Subsoil:
2 to 23 inches—reddish brown and brown very channery silt loam

Substratum:
23 to 27 inches—reddish brown and brown extremely channery silt loam

Hard bedrock:
27 inches—tillite and rhythmite bedrock

Minor Components

- Greenlee soils, which formed in colluvium; on the lower backslopes or on footslopes
- Tate soils, which formed in colluvium and local alluvium; on toeslopes
- Areas of shallow to very deep soils that are yellower than the Konnarock soil or that have more clay in the subsoil or more sand than the Konnarock soil; in similar positions
- Some areas of soils that have slopes of less than 15 percent
- Areas of rock outcrops in some delineations

Soil Properties and Qualities

Available water capacity: Very low (about 2.4 inches)
Slowest saturated hydraulic conductivity: High (about 2.0 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: None
Parent material: Residuum weathered from tillite and rhythmite

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Moderately suited to northern red oak

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soil: No

22B—Laidig sandy loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of mountains
Position on the landform: Footslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Laidig and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 6 inches—brown sandy loam

Subsurface layer:
6 to 15 inches—brownish yellow sandy loam

Subsoil:
15 to 31 inches—yellowish brown sandy clay loam
31 to 48 inches—yellowish brown sandy loam; light gray iron depletions
48 to 63 inches—strong brown and yellowish brown sandy loam; light gray iron depletions

Minor Components

- Berks and Lily soils, which do not have a fragipan and are moderately deep; on convex backslopes
- Tumbling soils, which do not have a fragipan and have more clay in the subsoil than the Laidig soil; in similar positions
- Areas of soils that are moderately well drained or that have a stony surface layer

Soil Properties and Qualities

Available water capacity: Low (about 3.5 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 30 to 50 inches to a fragipan
Drainage class: Well drained
Depth to seasonal water saturation: About 30 to 48 inches
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Colluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, soybeans, wheat, and grass-legume hay; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The limited available water capacity may cause plants to suffer from moisture stress.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope may restrict the use of some mechanical planting equipment.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The limited depth to a fragipan affects the ease of excavation and grading.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: W
Hydric soil: No

22C—Laidig sandy loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of mountains
Position on the landform: Footslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Laidig and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 6 inches—brown sandy loam

Subsurface layer:
6 to 15 inches—brownish yellow sandy loam

Subsoil:
15 to 31 inches—yellowish brown sandy clay loam
31 to 48 inches—yellowish brown sandy loam; light gray iron depletions

48 to 63 inches—strong brown and yellowish brown sandy loam; light gray iron depletions

Minor Components

- Berks and Lily soils, which do not have a fragipan and are moderately deep; on convex backslopes
- Tumbling soils, which do not have a fragipan and have more clay in the subsoil than the Laidig soil; in similar positions
- Small areas of soils that are moderately well drained or that have a stony surface layer

Soil Properties and Qualities

Available water capacity: Low (about 3.5 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 30 to 50 inches to a fragipan
Drainage class: Well drained
Depth to seasonal water saturation: About 30 to 48 inches
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Colluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, soybeans, wheat, and grass-legume hay; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The limited available water capacity may cause plants to suffer from moisture stress.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.

Woodland

Suitability: Moderately suited to northern red oak and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The limited depth to a fragipan affects the ease of excavation and grading.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: W
Hydric soil: No

22D—Laidig sandy loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of mountains
Position on the landform: Concave backslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Laidig and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 6 inches—brown sandy loam

Subsurface layer:
6 to 15 inches—brownish yellow sandy loam

Subsoil:
15 to 31 inches—yellowish brown sandy clay loam
31 to 48 inches—yellowish brown sandy loam; light gray iron depletions
48 to 63 inches—strong brown and yellowish brown sandy loam; light gray iron depletions

Minor Components

- Berks and Lily soils, which do not have a fragipan and are moderately deep; on convex backslopes
- Tumbling soils, which do not have a fragipan and have more clay in the subsoil than the Laidig soil; in similar positions
- Small areas of soils that are moderately well drained or that have a stony surface layer

Soil Properties and Qualities

Available water capacity: Low (about 3.5 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 30 to 50 inches to a fragipan
Drainage class: Well drained
Depth to seasonal water saturation: About 30 to 48 inches
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Colluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

Suitability: Poorly suited to corn, soybeans, wheat, and grass-legume hay; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The limited available water capacity may cause plants to suffer from moisture stress.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.

Woodland

Suitability: Well suited to northern red oak and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The limited depth to a fragipan affects the ease of excavation and grading.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: W
Hydric soil: No

23C—Laidig sandy loam, 7 to 15 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of mountains
Position on the landform: Footslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Laidig and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 6 inches—brown sandy loam

Subsurface layer:
6 to 15 inches—brownish yellow sandy loam

Subsoil:
15 to 31 inches—yellowish brown sandy clay loam
31 to 48 inches—yellowish brown sandy loam; light gray iron depletions
48 to 63 inches—strong brown and yellowish brown sandy loam; light gray iron depletions

Minor Components

- Berks and Lily soils, which do not have a fragipan and are moderately deep; on convex backslopes
- Tumbling soils, which do not have a fragipan and have more clay in the subsoil than the Laidig soil; in similar positions
- Small areas of soils that are moderately well drained or that do not have stones on the surface

Soil Properties and Qualities

Available water capacity: Low (about 3.5 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 30 to 50 inches to a fragipan

Drainage class: Well drained
Depth to seasonal water saturation: About 30 to 48 inches
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: About 0.1 to 3.0 percent subrounded stones
Parent material: Colluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- Large stones on the surface may restrict the operation of some farm machinery.

Woodland

Suitability: Well suited to northern red oak and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The limited depth to a fragipan affects the ease of excavation and grading.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6s
Virginia soil management group: W
Hydric soil: No

23D—Laidig sandy loam, 15 to 25 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of mountains
Position on the landform: Concave backslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Laidig and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 1 inch—slightly decomposed plant material

Surface layer:
1 to 6 inches—brown sandy loam

Subsurface layer:
6 to 15 inches—brownish yellow sandy loam

Subsoil:
15 to 31 inches—yellowish brown sandy clay loam
31 to 48 inches—yellowish brown sandy loam; light gray iron depletions
48 to 63 inches—strong brown and yellowish brown sandy loam; light gray iron depletions

Minor Components

- Berks and Lily soils, which do not have a fragipan and are moderately deep; on convex backslopes
- Tumbling soils, which do not have a fragipan and have more clay in the subsoil than the Laidig soil; in similar positions
- Small areas of soils that are moderately well drained or that do not have stones on the surface

Soil Properties and Qualities

Available water capacity: Low (about 3.5 inches)
Slowest saturated hydraulic conductivity: Moderately low (about 0.06 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 30 to 50 inches to a fragipan
Drainage class: Well drained
Depth to seasonal water saturation: About 30 to 48 inches
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.1 to 3.0 percent subrounded stones
Parent material: Colluvium derived from sandstone, siltstone, and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Well suited to northern red oak and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The limited depth to a fragipan affects the ease of excavation and grading.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: W
Hydric soil: No

24C—Lily sandy loam, 7 to 15 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains
Position on the landform: Summits and shoulders
Size of areas: 5 to 50 acres

Map Unit Composition

Lily and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 7 inches—brown sandy loam

Subsoil:
7 to 13 inches—yellowish brown sandy loam
13 to 24 inches—yellowish brown clay loam

Substratum:
24 to 30 inches—yellowish brown sandy loam

Hard bedrock:
30 inches—sandstone bedrock

Minor Components

- Berks soils, which formed in residuum derived mainly from shale; in positions similar to those of the Lily soil
- Dekalb soils, which have more rock fragments in the subsoil than the Lily soil; on narrow summits and shoulders
- Laidig and Tumbling soils, which are very deep; on colluvial footslopes and backslopes
- Soils that have an extremely stony or rubbly surface layer
- Areas of rock outcrops in some map unit delineations

Soil Properties and Qualities

Available water capacity: Low (about 3.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.1 to 3.0 percent subangular stones
Parent material: Residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.
- Large stones on the surface may restrict the operation of some farm machinery.

Woodland

Suitability: Well suited to Virginia pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6s
Virginia soil management group: U
Hydric soil: No

24D—Lily sandy loam, 15 to 25 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains
Position on the landform: Backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Lily and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 7 inches—brown sandy loam

Subsoil:
7 to 13 inches—yellowish brown sandy loam
13 to 24 inches—yellowish brown clay loam

Substratum:
24 to 30 inches—yellowish brown sandy loam

Hard bedrock:
30 inches—sandstone bedrock

Minor Components

- Berks soils, which formed in residuum derived primarily from shale; in positions similar to those of the Lily soil
- Dekalb soils, which have more rock fragments in the subsoil than the Lily soil; on narrow summits and shoulders
- Laidig and Tumbling soils, which are very deep; on colluvial footslopes and backslopes
- Areas of soils that have an extremely stony or rubbly surface layer
- Areas of rock outcrops in some map unit delineations

Soil Properties and Qualities

Available water capacity: Low (about 3.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 0.1 to 3.0 percent subangular stones
Parent material: Residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Well suited to Virginia pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: U
Hydric soil: No

24E—Lily sandy loam, 25 to 65 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Mountains
Position on the landform: Backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Lily and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 7 inches—brown sandy loam

Subsoil:
7 to 13 inches—yellowish brown sandy loam
13 to 24 inches—yellowish brown clay loam

Substratum:
24 to 30 inches—yellowish brown sandy loam

Hard bedrock:
30 inches—sandstone bedrock

Minor Components

- Berks soils, which formed in residuum derived mainly from shale; in positions similar to those of the Lily soil
- Dekalb soils, which have more clay in the subsoil than the Lily soil; on narrow summits and shoulders

- Laidig and Tumbling soils, which are very deep; on colluvial footslopes and backslopes
- Soils that have an extremely stony or rubbly surface layer
- Areas of rock outcrops in some delineations

Soil Properties and Qualities

Available water capacity: Low (about 3.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: About 0.1 to 3.0 percent subangular stones
Parent material: Residuum weathered from sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Well suited to Virginia pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: U
Hydric soil: No

25A—Maurertown silt loam, 0 to 2 percent slopes, occasionally flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Low stream terraces
Position on the landform: Depressions on treads
Size of areas: 5 to 100 acres

Map Unit Composition

Maurertown and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 6 inches—dark grayish brown silt loam

Subsoil:
6 to 18 inches—dark grayish brown silty clay loam; yellowish brown masses of oxidized iron
18 to 41 inches—dark gray silty clay; yellowish brown masses of oxidized iron

Substratum:
41 to 48 inches—very dark gray silty clay loam; yellowish brown and yellow masses of oxidized iron and light gray iron depletions
48 to 62 inches—gray gravelly silty clay loam; brownish yellow masses of oxidized iron and light gray iron depletions

Minor Components

- Derroc soils, which are well drained; on the lower flood plains
- Melvin soils, which are on the lower flood plains
- Sindion soils, which are moderately well drained; on the lower flood plains
- Shelocta soils, which are well drained and formed in colluvium; on footslopes and toeslopes

Soil Properties and Qualities

Available water capacity: Moderate (about 8.9 inches)
Slowest saturated hydraulic conductivity: Low (about 0.001 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Poorly drained

Depth to seasonal water saturation: About 0 to 6 inches
Water table kind: Apparent
Flooding hazard: Occasional
Ponding hazard: Frequent
Depth of ponding: 0.0 to 0.5 foot
Shrink-swell potential: High
Runoff class: Negligible
Surface fragments: None
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Poorly suited to corn, soybeans, and wheat; not suited to grass-legume hay and alfalfa hay

- The high clay content restricts the rooting depth of crops.
- Frost action may damage the root system of winter grain crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.
- Flooding may damage crops.
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pastureland

Suitability: Moderately suited

- Flooding may damage pastures.
- The seasonal high water table can affect equipment use, grazing patterns, and the viability of grass and legume species.
- Compaction may occur when the soil is wet.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Moderately suited to yellow-poplar and sweetgum

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside management zones and stream crossings and should include general adherence to all applicable Best Management Practices (BMPs).
- Flooding may damage haul roads.
- Flooding and ponding restrict the safe use of log trucks.
- Soil wetness may limit the use of log trucks.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- Flooding and ponding are limitations affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Flooding and ponding are limitations affecting septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Figure 7.—Saltville, Virginia. In this basin-shaped area, salt has accumulated to significant depths in bedrock troughs. The wet areas are Melvin silt loam, 0 to 2 percent slopes, frequently flooded.

Local roads and streets

- Flooding may damage local roads and streets.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4w
Virginia soil management group: NN
Hydric soil: Yes

26A—Melvin silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains (fig. 7)
Position on the landform: Low-lying areas on treads
Size of areas: 5 to 100 acres

Map Unit Composition

Melvin and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 6 inches—dark brown silt loam

Subsoil:
6 to 13 inches—grayish brown silt loam; brownish yellow masses of oxidized iron
13 to 31 inches—gray silty clay loam; brownish yellow masses of oxidized iron

Substratum:
31 to 62 inches—gray silt loam; brownish yellow masses of oxidized iron

Minor Components

- Marbie soils, which are moderately well drained
- Shelocta, Timberville, and Wyrick soils, which are well drained; on toeslopes
- Derroc soils, which are well drained; on landforms similar to those of the Melvin soil
- Sindion soils, which are moderately well drained; on landforms similar to those of the Melvin soil

Soil Properties and Qualities

Available water capacity: High (about 10.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Poorly drained
Depth to seasonal water saturation: About 0 to 12 inches
Water table kind: Apparent
Flooding hazard: Frequent
Ponding hazard: Frequent
Depth of ponding: 0.0 to 0.5 foot
Shrink-swell potential: Low
Runoff class: Negligible
Surface fragments: None
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Poorly suited
- Flooding may damage pastures.
- The seasonal high water table can affect equipment use, grazing patterns, and the viability of grass and legume species.
- Compaction may occur when the soil is wet.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Moderately suited to sweetgum
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside

management zones and stream crossings and should include general adherence to all applicable Best Management Practices (BMPs).
- Flooding may damage haul roads.
- Flooding and ponding restrict the safe use of log trucks.
- Soil wetness may limit the use of log trucks.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding and ponding are limitations affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Flooding and ponding are limitations affecting septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Flooding may damage local roads and streets.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of the soil.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6w
Virginia soil management group: NN
Hydric soil: Yes

27D—Newbern-Westmoreland complex, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Backslopes
Size of areas: 5 to 50 acres

Map Unit Composition

Note: These Newbern and Westmoreland soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Newbern and similar soils: Typically 40 percent, ranging from about 30 to 50 percent
Westmoreland and similar soils: Typically 35 percent, ranging from about 25 to 45 percent

Typical Profile

Newbern

Surface layer:
0 to 4 inches—brown silt loam

Subsoil:
4 to 11 inches—yellowish brown channery silt loam

Soft bedrock:
11 to 15 inches—yellowish brown bedrock

Hard bedrock:
15 inches—shale interbedded with limestone bedrock

Westmoreland

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 16 inches—yellowish brown silt loam
16 to 34 inches—yellowish brown silty clay loam
34 to 39 inches—yellowish brown channery silty clay loam

Substratum:
39 to 47 inches—yellowish brown extremely channery silt loam

Hard bedrock:
47 inches—shale bedrock

Minor Components

- Carbo and Wurno soils, which are moderately deep; in positions similar to those of the Newbern and Westmoreland soils
- Shelocta soils, which are very deep and formed in colluvium; on concave backslopes and footslopes
- Areas of rock outcrops and areas of soils that have a red subsoil or that have cobbles, stones, or boulders on the surface; in positions similar to those of the Newbern and Westmoreland soils
- A few small areas that have slopes of less than 15 percent

Soil Properties and Qualities

Available water capacity: Newbern—very low (about 1.6 inches); Westmoreland—moderate (about 6.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Newbern—shallow (10 to 20 inches); Westmoreland—deep (40 to 60 inches)
Depth to root-restrictive feature: Newbern—10 to 20 inches to bedrock (lithic); Westmoreland—40 to 60 inches to bedrock (lithic)
Drainage class: Newbern—somewhat excessively drained; Westmoreland—well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Newbern—residuum weathered from shale interbedded with limestone; Westmoreland—residuum weathered from interbedded limestone, shale, and siltstone

Use and Management Considerations

Cropland

Suitability: Poorly suited to corn, soybeans, wheat, and grass-legume hay; not suited to alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock restricts the rooting depth of crops.
- The limited available water capacity may cause plants to suffer from moisture stress.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Well suited to Virginia pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: Newbern—JJ; Westmoreland—U
Hydric soils: No

27E—Newbern-Westmoreland complex, 25 to 65 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Backslopes
Size of areas: 5 to 50 acres

Map Unit Composition

Note: These Newbern and Westmoreland soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Newbern and similar soils: Typically 40 percent, ranging from about 30 to 50 percent
Westmoreland and similar soils: Typically 35 percent, ranging from about 25 to 45 percent

Typical Profile

Newbern

Surface layer:
0 to 4 inches—brown silt loam

Subsoil:
4 to 11 inches—yellowish brown channery silt loam

Soft bedrock:
11 to 15 inches—yellowish brown bedrock

Hard bedrock:
15 inches—shale interbedded with limestone bedrock

Westmoreland

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 16 inches—yellowish brown silt loam
16 to 34 inches—yellowish brown silty clay loam
34 to 39 inches—yellowish brown channery silty clay loam

Substratum:
39 to 47 inches—yellowish brown extremely channery silt loam

Hard bedrock:
47 inches—shale bedrock

Minor Components

- Carbo and Wurno soils, which are moderately deep; in positions similar to those of the Newbern and Westmoreland soils
- Shelocta soils, which are very deep and formed in colluvium; on concave backslopes and footslopes
- Areas of rock outcrops and areas of soils that have a red subsoil or that have cobbles, stones, or boulders on the surface; in positions similar to those of the Newbern and Westmoreland soils

Soil Properties and Qualities

Available water capacity: Newbern—very low (about 1.6 inches); Westmoreland—moderate (about 6.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Newbern—shallow (10 to 20 inches); Westmoreland—deep (40 to 60 inches)
Depth to root-restrictive feature: Newbern—10 to 20 inches to bedrock (lithic); Westmoreland—40 to 60 inches to bedrock (lithic)
Drainage class: Newbern—somewhat excessively drained; Westmoreland—well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Newbern—residuum weathered from shale interbedded with limestone; Westmoreland—residuum weathered from interbedded limestone, shale, and siltstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pasture.

Woodland

Suitability: Well suited to Virginia pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Newbern—JJ; Westmoreland—U
Hydric soils: No

28—Pits, quarries

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Upland, open-pit mine
Size of areas: 2 to 75 acres

Map Unit Composition

Pits: Typically 100 percent, ranging from about 90 to 100 percent

Typical Profile

This map unit consists of open excavations from which barite, iron ore, lead ore, limestone, manganese, sandstone, shale, quartzite, and zinc ore have been mined. Areas are scattered throughout the county. Little or no vegetation grows in the limestone, quartzite, sandstone, and shale pits. Sparse vegetation, however, grows in the abandoned open-pit mines for barite, iron, lead, manganese, and zinc. In low-lying positions in these mines, soil washed from surrounding areas provides a medium for growing plants.

Lump barite occurred in clay formed in residuum derived from limestone. Barite was mined in a district 3 miles west of Marion. Iron, lead, manganese, and zinc were mined on Brushy Mountain and Glade Mountain. These ores were mined as recently as the early 1900's.

Limestone quarries that range from about 3 to 75 acres in size are scattered throughout the county. Limestone is mined for use in road construction.

Sandstone pits that range from about 2 to 50 acres in size are mainly on Clinch Mountain. Sandstone is mined for use in road construction, as masonry sand, in making tile, and in glassmaking.

Shale pits that are as much as 5 acres in size are scattered throughout the county. Shale is mined for use as roadbed material and fill.

Quartzite is mined on Brushy Mountain. The mined areas range from about 3 to 50 acres in size. Quartzite is used in road construction, as masonry sand, and in glassmaking.

Use and Management Considerations

Onsite investigation is needed to determine the suitability of any area for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: None assigned
Virginia soil management group: None assigned
Hydric soils: No

29C—Poynor very gravelly silt loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Summits and shoulders
Size of areas: 5 to more than 100 acres

Map Unit Composition

Poynor and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 6 inches—brown very gravelly silt loam

Subsoil:
6 to 30 inches—yellowish brown extremely gravelly loam
30 to 62 inches—red clay

Minor Components

- Carbo soils, which are moderately deep; in positions similar to those of the Poynor soil
- Frederick soils, which have less gravel than the Poynor soil; in similar positions
- Areas of soils that have an extremely stony or rubbly surface layer and areas of rock outcrops; in positions similar to those of the Poynor soil

Soil Properties and Qualities

Available water capacity: Low (about 4.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from cherty dolomite

Use and Management Considerations

Cropland

Suitability: Poorly suited to corn, soybeans, wheat, and grass-legume hay; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to white oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4s
Virginia soil management group: GG
Hydric soil: No

29D—Poynor very gravelly silt loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Poynor and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 6 inches—brown very gravelly silt loam

Subsoil:
6 to 30 inches—yellowish brown extremely gravelly loam
30 to 62 inches—red clay

Minor Components

- Carbo soils, which are moderately deep; in positions similar to those of the Poynor soil
- Frederick soils, which have less gravel than the Poynor soil; in similar positions
- Areas of soils that have an extremely stony or rubbly surface layer and areas of rock outcrops; in positions similar to those of the Poynor soil

Soil Properties and Qualities

Available water capacity: Low (about 4.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from cherty dolomite

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to white oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.

- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6s
Virginia soil management group: GG
Hydric soil: No

29E—Poynor very gravelly silt loam, 25 to 60 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Poynor and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 6 inches—brown very gravelly silt loam

Subsoil:
6 to 30 inches—yellowish brown extremely gravelly loam
30 to 62 inches—red clay

Minor Components

- Carbo soils, which are moderately deep; in positions similar to those of the Poynor soil
- Frederick soils, which have less gravel than the Poynor soil; in similar positions
- Areas of soils that have an extremely stony or rubbly surface layer and areas of rock outcrops; in positions similar to those of the Poynor soil

Soil Properties and Qualities

Available water capacity: Low (about 4.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)

Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from cherty dolomite

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Moderately suited to white oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: GG
Hydric soil: No

30F—Rock outcrop-Newbern complex, 25 to 99 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Very steep hills and escarpments along major streams and rivers; rock outcrops are a dominant feature in these areas and form near-vertical cliffs
Position on the landform: Backslopes
Size of areas: 5 to 200 acres

Map Unit Composition

Note: The Rock outcrop and this Newbern soil occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Rock outcrop: Typically 40 percent, ranging from about 30 to 50 percent
Newbern and similar soils: Typically 35 percent, ranging from about 25 to 45 percent

Typical Profile

Rock outcrop

This part of the map unit consists of outcrops of hard limestone bedrock. These exposures are near-vertical cliffs.

Newbern

Surface layer:
0 to 4 inches—brown silt loam

Subsoil:
4 to 11 inches—yellowish brown channery silt loam

Soft bedrock:
11 to 15 inches—yellowish brown bedrock

Hard bedrock:
15 inches—shale bedrock

Minor Components

- Carbo and Frederick soils, which are deeper to bedrock than the Newbern soil; in similar positions
- Speedwell and Wolfgap soils, which are deeper to bedrock than the Newbern soil; on narrow flood plains at the lower elevations

Properties and Qualities of the Newbern Soil

Available water capacity: Very low (about 1.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Shallow (10 to 20 inches)
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Drainage class: Somewhat excessively drained

Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from shale interbedded with limestone

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pasture.

Woodland

- Because of the proximity to steep bluffs, areas of this map unit are not recommended for conventional timber management.

Building site development

- Because of the proximity to steep river bluffs, areas of this map unit are not recommended for building sites.

Septic tank absorption fields

- Because of the proximity to steep river bluffs, areas of this map unit are not recommended for septic tank absorption fields.

Local roads and streets

- Because of the proximity to steep river bluffs, areas of this map unit are not recommended for local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Rock outcrop—8s; Newbern—7s
Virginia soil management group: Rock outcrop—none assigned; Newbern—JJ
Hydric soils: No

31B—Shelocta silt loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of mountains and areas in drainageways
Position on the landform: Concave footslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Shelocta and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 8 inches—dark yellowish brown silt loam

Subsoil:
8 to 15 inches—brown silt loam
15 to 34 inches—strong brown silt loam
34 to 46 inches—strong brown silty clay loam
46 to 62 inches—strong brown channery silty clay loam

Minor Components

- Berks, Groseclose, and Westmoreland soils, which formed in residuum; on the lower backslopes
- Derroc soils, which have more rock fragments than the Shelocta soil; on flood plains
- Laidig soils, which have a fragipan; in positions similar to those of the Shelocta soil
- Tumbling soils, which have more clay in the subsoil than the Shelocta soil; in similar positions
- Areas of soils that are moderately well drained or that have a very stony surface layer

Soil Properties and Qualities

Available water capacity: High (about 10.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 48 to 80 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Colluvium derived from shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- This soil is well suited to building sites.

Septic tank absorption fields

- The excessive permeability in the lower part of the subsoil limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may cause structural damage to local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: L
Hydric soil: No

31C—Shelocta silt loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of mountains and areas in drainageways
Position on the landform: Concave footslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Shelocta and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 8 inches—dark yellowish brown silt loam

Subsoil:
8 to 15 inches—brown silt loam
15 to 34 inches—strong brown silt loam
34 to 46 inches—strong brown silty clay loam
46 to 62 inches—strong brown channery silty clay loam

Minor Components

- Berks, Groseclose, and Westmoreland soils, which formed in residuum on lower backslopes
- Derroc soils, which have more rock fragments than the Shelocta soil; on flood plains
- Laidig soils, which have a fragipan; in positions similar to those of the Shelocta soil
- Tumbling soils, which have more clay in the subsoil than the Shelocta soil; in similar positions
- Areas of soils that are moderately well drained or that have a very stony surface layer

Soil Properties and Qualities

Available water capacity: High (about 10.1 inches)

Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 48 to 80 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Colluvium derived from shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Well suited to wheat and grass-legume hay; moderately suited to corn, soybeans, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e

Virginia soil management group: L
Hydric soil: No

31D—Shelocta silt loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of mountains
Position on the landform: Concave footslopes and lower backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Shelocta and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 8 inches—dark yellowish brown silt loam

Subsoil:
8 to 15 inches—brown silt loam
15 to 34 inches—strong brown silt loam
34 to 46 inches—strong brown silty clay loam
46 to 62 inches—strong brown channery silty clay loam

Minor Components

- Berks, Groseclose, and Westmoreland soils, which formed in residuum on the lower backslopes
- Derroc soils, which have more rock fragments in the subsoil than the Shelocta soil; on flood plains
- Laidig soils, which have a fragipan; in positions similar to those of the Shelocta soil
- Tumbling soils, which have more clay in the subsoil than the Shelocta soil; in similar positions
- Areas of soils that are moderately well drained or that have a very stony surface layer

Soil Properties and Qualities

Available water capacity: High (about 10.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 48 to 80 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Colluvium derived from shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, wheat, grass-legume hay, and alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: L
Hydric soil: No

31E—Shelocta silt loam, 25 to 45 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of mountains
Position on the landform: Concave footslopes and lower backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Shelocta and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 8 inches—dark yellowish brown silt loam

Subsoil:
8 to 15 inches—brown silt loam
15 to 34 inches—strong brown silt loam
34 to 46 inches—strong brown silty clay loam
46 to 62 inches—strong brown channery silty clay loam

Minor Components

- Berks, Groseclose, and Westmoreland soils, which formed in residuum on the lower backslopes
- Derroc soils, which have more rock fragments in the subsoil than the Shelocta soil; on flood plains
- Laidig soils, which have a fragipan; in positions similar to those of the Shelocta soil
- Tumbling soils, which have more clay in the subsoil than the Shelocta soil; in similar positions
- Areas of soils that are moderately well drained or that have a very stony surface layer

Soil Properties and Qualities

Available water capacity: High (about 10.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 48 to 80 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Colluvium derived from shale, siltstone, and sandstone

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).

- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: L
Hydric soil: No

32B—Shottower loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: High stream terraces along major streams
Position on the landform: Treads
Size of areas: 5 to more than 100 acres

Map Unit Composition

Shottower and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 9 inches—brown loam

Subsoil:
9 to 21 inches—strong brown clay loam
21 to 62 inches—strong brown clay

Minor Components

- Frederick soils, which formed in residuum; on shoulders and backslopes of hills
- Ingledove and Wheeling soils, which have less clay than the Shottower soil; on treads of low stream terraces
- Speedwell and Wolfgap soils, which have less clay than the Shottower soil; on flood plains
- Areas of soils that have a cobbly surface layer

Soil Properties and Qualities

Available water capacity: Moderate (about 6.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone; in the New River drainage, the alluvium is mixed with materials derived from crystalline rocks

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- This soil is well suited to septic tank absorption fields.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e

Virginia soil management group: O
Hydric soil: No

32C—Shottower loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: High stream terraces along major streams
Position on the landform: Treads and risers
Size of areas: 5 to more than 100 acres

Map Unit Composition

Shottower and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 9 inches—brown loam

Subsoil:
9 to 21 inches—strong brown clay loam
21 to 62 inches—strong brown clay

Minor Components

- Frederick soils, which formed in residuum; on shoulders and backslopes of hills
- Ingledove and Wheeling soils, which have less clay than the Shottower soil; on treads of low stream terraces
- Speedwell and Wolfgap soils, which have less clay than the Shottower soil; on flood plains
- Soils that have a cobbly surface layer

Soil Properties and Qualities

Available water capacity: Moderate (about 6.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone; in the New River drainage, the alluvium is mixed with materials derived from crystalline rocks

Use and Management Considerations

Cropland

Suitability: Well suited to wheat and grass-legume hay; moderately suited to corn, soybeans, and alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: O
Hydric soil: No

32D—Shottower loam, 15 to 30 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: High stream terraces along major streams
Position on the landform: Risers
Size of areas: 5 to more than 100 acres

Map Unit Composition

Shottower and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 9 inches—brown loam

Subsoil:
9 to 21 inches—strong brown clay loam
21 to 62 inches—strong brown clay

Minor Components

- Frederick soils, which formed in residuum; on shoulders and backslopes of valley uplands
- Ingledove and Wheeling soils, which have less clay than the Shottower soil; on treads of low stream terraces
- Speedwell and Wolfgap soils, which have less clay than the Shottower soil; on flood plains
- Soils that have a cobbly surface layer

Soil Properties and Qualities

Available water capacity: Moderate (about 6.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone; in the New River drainage, the alluvium is mixed with materials derived from crystalline rocks

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- Excessive slope increases surface runoff, erosion hazard, and nutrient loss and restricts the use of farm machinery.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.

- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: O
Hydric soil: No

33A—Sindion silt loam, 0 to 2 percent slopes, occasionally flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains
Position on the landform: Treads
Size of areas: 5 to 300 acres

Map Unit Composition

Sindion and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 10 inches—dark brown silt loam

Subsurface layer:
10 to 17 inches—dark brown silt loam

Subsoil:
17 to 26 inches—very dark grayish brown loam
26 to 42 inches—yellowish brown and dark gray loam

Substratum:
42 to 54 inches—yellowish brown and dark gray loam
54 to 62 inches—yellowish brown and dark gray gravelly loam

Minor Components

- Marbie and Wyrick soils, which formed in colluvium; on concave footslopes adjacent to flood plains
- Melvin soils, which are poorly drained; in low areas on flood plains
- Speedwell and Wolfgap soils, which are well drained; in areas scattered throughout flood plains
- Wheeling soils, which are well drained; on low stream terraces

Soil Properties and Qualities

Available water capacity: High (about 11.2 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Moderately well drained
Depth to seasonal water saturation: About 18 to 36 inches
Water table kind: Apparent
Flooding hazard: Occasional
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: None
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; not suited to alfalfa hay
- Frost action may damage the root system of winter grain crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.
- Flooding may damage crops.

Pastureland

Suitability: Well suited
- Flooding may damage pastures.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Well suited to northern red oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside management zones and stream crossings and should include general adherence to all applicable Best Management Practices (BMPs).
- Flooding may damage haul roads and restricts the safe use of log trucks.
- Soil wetness may limit the use of log trucks.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding is a limitation affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Flooding is a limitation affecting septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Flooding may damage local roads and streets.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2w
Virginia soil management group: B
Hydric soil: No

34—Slickens

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Settling pond
Size of areas: 5 to 100 acres

Typical Profile

This map unit consists of slickens, which are settling ponds that contain accumulations of chemically treated fine textured material. Slickens are confined mainly in specially constructed basins or ponds. Some slickens consist of precipitate and sludge from old salt-processing plants near Saltville. Slickens are so variable that a typical profile is not described.

Use and Management Considerations

Onsite investigation is needed to determine the suitability of any area for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: None assigned
Virginia soil management group: None assigned
Hydric soils: No

35A—Speedwell fine sandy loam, 0 to 2 percent slopes, occasionally flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains
Position on the landform: Treads
Size of areas: 5 to 200 acres

Map Unit Composition

Speedwell and similar soils: Typically 80 percent, ranging from about 70 to 90 percent

Typical Profile

Surface layer:
0 to 10 inches—dark brown fine sandy loam

Subsurface layer:
10 to 17 inches—dark brown fine sandy loam

Subsoil:
17 to 41 inches—brown loam

Substratum:
41 to 62 inches—brown sandy loam; grayish brown iron depletions and yellowish brown masses of oxidized iron

Minor Components

- Derroc soils, which have more rock fragments than the Speedwell soil; in areas scattered throughout the flood plains
- Shottower soils, which have more clay in the subsoil than the Speedwell soil; on high stream terraces
- Sindion soils, which are moderately well drained; in areas scattered throughout the flood plains
- Wheeling soils, which are on low stream terraces

Soil Properties and Qualities

Available water capacity: High (about 10.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: Occasional
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Surface fragments: None
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- Flooding may damage crops.

Pastureland

Suitability: Well suited
- Flooding may damage pastures.

Woodland

Suitability: Well suited to northern red oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside

management zones and stream crossings and should include general adherence to all applicable Best Management Practices (BMPs).
- Flooding may damage haul roads and restricts the safe use of log trucks.

Building sites

- Flooding is a limitation affecting building site development.

Septic tank absorption fields

- Flooding is a limitation affecting septic tank absorption fields.

Local roads and streets

- Flooding may damage local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 1
Virginia soil management group: A
Hydric soil: No

36D—Sylco-Sylvatus complex, 15 to 35 percent slopes

Setting

Major land resource area: Blue Ridge (MLRA 130)
Landform: Mountains
Position on the landform: Shoulders and backslopes
Size of areas: 5 to 50 acres

Map Unit Composition

Note: These Sylco and Sylvatus soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Sylco and similar soils: Typically 40 percent, ranging from about 30 to 50 percent
Sylvatus and similar soils: Typically 35 percent, ranging from about 25 to 45 percent

Typical Profile

Sylco

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 6 inches—dark grayish brown channery silt loam

Subsoil:
6 to 31 inches—yellowish brown very channery silt loam

Substratum:
31 to 36 inches—yellowish brown extremely channery silt loam

Hard bedrock:
36 inches—phyllite bedrock

Sylvatus

Surface layer:
0 to 2 inches—very dark grayish brown very channery silt loam

Subsoil:
2 to 12 inches—brownish yellow extremely channery silt loam

Hard bedrock:
12 inches—phyllite bedrock

Minor Components

- Lily soils, which have more clay in the subsoil and fewer rock fragments than the Sylco and Sylvatus soils; in similar positions
- Shelocta soils, which are very deep and formed in colluvium; on footslopes
- Some areas that have slopes of less than 15 percent

Soil Properties and Qualities

Available water capacity: Sylco—low (about 3.6 inches); Sylvatus—very low (about 0.6 inch)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Sylco—moderately deep (20 to 40 inches); Sylvatus—shallow (10 to 20 inches)
Depth to root-restrictive feature: Sylco—20 to 40 inches to bedrock (lithic); Sylvatus—10 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: None
Parent material: Residuum weathered from interbedded phyllite, slate, and fine-grained metasandstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Moderately suited to eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.

- Because of the slope, the use of mechanical planting equipment is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: JJ
Hydric soils: No

36E—Sylco-Sylvatus complex, 35 to 70 percent slopes

Setting

Major land resource area: Blue Ridge (MLRA 130)
Landform: Mountains
Position on the landform: Backslopes
Size of areas: 5 to 50 acres

Map Unit Composition

Note: These Sylco and Sylvatus soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Sylco and similar soils: Typically 40 percent, ranging from about 30 to 50 percent
Sylvatus and similar soils: Typically 35 percent, ranging from about 25 to 45 percent

Typical Profile

Sylco

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 6 inches—dark grayish brown channery silt loam

Subsoil:
6 to 31 inches—yellowish brown very channery silt loam

Substratum:
31 to 36 inches—yellowish brown extremely channery silt loam

Hard bedrock:
36 inches—phyllite bedrock

Sylvatus

Surface layer:
0 to 2 inches—very dark grayish brown very channery silt loam

Subsoil:
2 to 12 inches—brownish yellow extremely channery silt loam

Hard bedrock:
12 inches—phyllite bedrock

Minor Components

- Lily soils, which have more clay in the subsoil and fewer rock fragments than the Sylco and Sylvatus soils; in similar positions
- Shelocta soils, which are very deep and formed in colluvium on footslopes
- Some areas that have slopes of less than 35 percent

Soil Properties and Qualities

Available water capacity: Sylco—low (about 3.6 inches); Sylvatus—very low (about 0.6 inch)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Sylco—moderately deep (20 to 40 inches); Sylvatus—shallow (10 to 20 inches)
Depth to root-restrictive feature: Sylco—20 to 40 inches to bedrock (lithic); Sylvatus—10 to 20 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Very high
Surface fragments: None
Parent material: Residuum weathered from interbedded phyllite, slate, and fine-grained metasandstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pasture.

Woodland

Suitability: Moderately suited to eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).

- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soils: No

37B—Tate loam, 2 to 7 percent slopes

Setting

Major land resource area: Blue Ridge (MLRA 130)
Landform: Base of slopes of mountains and in valleys, near Mount Rogers (figs. 8 and 9)
Position on the landform: Footslopes and toeslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Tate and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 6 inches—dark yellowish brown loam

Subsoil:
6 to 13 inches—yellowish brown loam
13 to 44 inches—yellowish brown clay loam

Figure 8.—Grass-legume hay and Christmas trees on Tate loam, 2 to 7 percent slopes.

Substratum:
44 to 62 inches—light yellowish brown gravelly loamy sand; very pale brown mottles

Minor Components

- Greenlee soils, which have more rock fragments than the Tate soil; in similar positions
- Konnarock soils, which are moderately deep and formed in residuum; on the lower backslopes
- Areas of soils that are poorly drained or that have a very stony or extremely stony surface layer

Soil Properties and Qualities

Available water capacity: Moderate (about 6.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Alluvium and colluvium derived from rhyolite, gneiss, and granite

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland

Suitability: Well suited

- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to eastern white pine; moderately suited to yellow-poplar; poorly suited to northern red oak

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).

Figure 9.—Tate loam, 2 to 7 percent slopes, is mapped in the non-wooded areas in the valleys of the Blue Ridge Mountains (in the center portion of the photograph). Red spruce and other northern tree species thrive at elevations generally above 4,500 feet. These areas are mapped as Sylco-Sylvatus complex, 35 to 70 percent slopes, and Konnarock very channery silt loam, 35 to 65 percent slopes.

- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The high content of sand or gravel in the soil increases sloughing and causes cutbanks to be more susceptible to caving.

Septic tank absorption fields

- The excessive permeability of the substratum limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: O
Hydric soil: No

38B—Timberville silt loam, 0 to 7 percent slopes, rarely flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Drainageways, at the base of hills in valleys
Position on the landform: Toeslopes
Size of areas: 5 to 25 acres

Map Unit Composition

Timberville and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 12 inches—dark yellowish brown silt loam

Subsurface layer:
12 to 25 inches—dark yellowish brown silt loam

Subsoil:
25 to 42 inches—dark yellowish brown silty clay loam
42 to 62 inches—dark yellowish brown clay loam

Minor Components

- Carbo soils, which are moderately deep and formed in residuum; on convex summits and shoulders
- Frederick soils, which formed in residuum; on convex summits and shoulders
- Marbie soils, which have a fragipan; at the heads of drainageways and in depressions and other low areas
- Wyrick soils, which have less clay in the subsoil than the Timberville soil; at the heads of drainageways and in depressions and other low areas

Soil Properties and Qualities

Available water capacity: High (about 10.0 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: Rare
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Low
Surface fragments: None
Parent material: Colluvium and alluvium derived from limestone, shale, and sandstone

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding is a limitation affecting building site development.

Septic tank absorption fields

- This soil is well suited to septic tank absorption fields.

Local roads and streets

- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e

Virginia soil management group: G
Hydric soil: No

39B—Tumbling loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes and toeslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Tumbling and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam
34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

- Berks, Carbo, and Lily soils, which are moderately deep and formed in residuum on backslopes
- Frederick soils, which are very deep and formed in residuum on backslopes
- Laidig soils, which have a fragipan; in positions similar to those of the Tumbling soil
- Derroc soils, which are subject to flooding; in drainageways
- Areas of soils that are moderately well drained or that have a very stony or extremely stony surface layer; in positions similar to those of the Tumbling soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Colluvium derived from sandstone, quartzite, and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- This soil is well suited to building sites.

Septic tank absorption fields

- This soil is well suited to septic tank absorption fields.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: O
Hydric soil: No

39C—Tumbling loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes and toeslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Tumbling and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam

34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

- Berks, Carbo, and Lily soils, which are moderately deep and formed in residuum on backslopes
- Frederick soils, which are very deep and formed in residuum on backslopes
- Laidig soils, which have a fragipan; in positions similar to those of the Tumbling soil
- Derroc soils, which are subject to flooding; in drainageways
- Areas of soils that are moderately well drained or that have a very stony or extremely stony surface layer; in positions similar to those of the Tumbling soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Colluvium derived from sandstone, quartzite, and shale

Use and Management Considerations

Cropland

Suitability: Well suited to wheat and grass-legume hay; moderately suited to corn, soybeans, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: O
Hydric soil: No

39D—Tumbling loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Tumbling and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam
34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

- Berks, Carbo, and Lily soils, which are moderately deep and formed in residuum on backslopes
- Frederick soils, which are very deep and formed in residuum on backslopes
- Laidig soils, which have a fragipan; in positions similar to those of the Tumbling soil
- Derroc soils, which are subject to flooding; in drainageways
- Areas of soils that are moderately well drained or that have a very stony or extremely stony surface layer; in positions similar to those of the Tumbling soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None

Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Colluvium derived from sandstone, quartzite, and shale

Use and Management Considerations

Cropland

Suitability: Moderately suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: O
Hydric soil: No

39E—Tumbling loam, 25 to 35 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Lower part of hills and mountains
Position on the landform: Concave positions on backslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Tumbling and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam
34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

- Berks, Carbo, and Lily soils, which are moderately deep and formed in residuum on backslopes
- Frederick soils, which are very deep and formed in residuum on backslopes
- Laidig soils, which have a fragipan; in positions similar to those of the Tumbling soil
- Derroc soils, which are subject to flooding; in drainageways
- Areas of soils that are moderately well drained or that have a very stony or extremely stony surface layer; in positions similar to those of the Tumbling soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Colluvium derived from sandstone, quartzite, and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.

Woodland

Suitability: Moderately suited to northern red oak, yellow-poplar, and eastern white pine

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6e
Virginia soil management group: O
Hydric soil: No

40C—Tumbling loam, 7 to 15 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes and toeslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Tumbling and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam

34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

- Berks, Carbo, and Lily soils, which are moderately deep and formed in residuum on backslopes
- Frederick soils, which are very deep and formed in residuum on backslopes
- Laidig soils, which have a fragipan; in positions similar to those of the Tumbling soil
- Derroc soils, which are subject to flooding; in drainageways
- Areas of soils that are moderately well drained or that have a nonstony or extremely stony surface layer; in positions similar to those of the Tumbling soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: About 0.1 to 3.0 percent subrounded stones
Parent material: Colluvium derived from sandstone, quartzite, and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Large stones on the surface may restrict the operation of some farm machinery.

Woodland

Suitability: Moderately suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 6s
Virginia soil management group: O
Hydric soil: No

40D—Tumbling loam, 15 to 25 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Base of slopes of hills and mountains
Position on the landform: Footslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Tumbling and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam
34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

- Berks, Carbo, and Lily soils, which are moderately deep and formed in residuum on backslopes
- Frederick soils, which are very deep and formed in residuum on backslopes
- Laidig soils, which have a fragipan; in positions similar to those of the Tumbling soil
- Derroc soils, which are subject to flooding; in drainageways
- Areas of soils that are moderately well drained or that have a nonstony or extremely stony surface layer; in positions similar to those of the Tumbling soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.1 to 3.0 percent subrounded stones
Parent material: Colluvium derived from sandstone, quartzite, and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Moderately suited to northern red oak, yellow-poplar, and eastern white pine

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7s
Virginia soil management group: O
Hydric soil: No

40E—Tumbling loam, 25 to 65 percent slopes, very stony

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Lower part of hills and mountains
Position on the landform: Concave positions on backslopes
Size of areas: 5 to more than 100 acres

Map Unit Composition

Tumbling and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown loam

Subsoil:
9 to 16 inches—yellowish brown clay loam
16 to 34 inches—strong brown clay loam
34 to 44 inches—strong brown clay loam; red mottles
44 to 62 inches—yellowish red clay loam; yellowish brown mottles

Minor Components

- Berks, Carbo, and Lily soils, which are moderately deep and formed in residuum on backslopes
- Frederick soils, which are very deep and formed in residuum on backslopes
- Laidig soils, which have a fragipan; in positions similar to those of the Tumbling soil
- Derroc soils, which are subject to flooding; in drainageways
- Areas of soils that are moderately well drained or that have a nonstony or extremely stony surface layer; in positions similar to those of the Tumbling soil

Soil Properties and Qualities

Available water capacity: Moderate (about 8.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: About 0.1 to 3.0 percent subrounded stones
Parent material: Colluvium derived from sandstone, quartzite, and shale

Use and Management Considerations

Cropland

- This soil is unsuited to cropland.

Pastureland

- This soil is unsuited to pasture.

Woodland

Suitability: Moderately suited to northern red oak, yellow-poplar, and eastern white pine

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.

- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields

- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: O
Hydric soil: No

41—Udorthents-Urban land complex, 0 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and stream terraces
Size of areas: 5 to 500 acres

Map Unit Composition

Note: Udorthents and Urban land occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Udorthents and similar soils: Typically 45 percent, ranging from about 35 to 55 percent
Urban land: Typically 30 percent, ranging from about 20 to 40 percent

Typical Profile

Udorthents

This part of the map unit consists of cut and fill areas. Udorthents formed in a mixture of disturbed soil material and rock fragments in excavations, filled areas, or other disturbed areas used for highways or towns or as construction sites. They are shallow to very deep and somewhat poorly drained to well drained. In most areas the surface layer ranges from about 5 to 15 inches in thickness. It varies in color and texture. The underlying material generally extends to a depth of several feet, but in some areas it is at a depth of 10 inches. In most areas it is mottled in shades of red, brown, and yellow. Because of the variability of the material, a typical profile is not given.

Urban land

This part of the map unit consists of land that is covered by highways, streets, parking lots, buildings, and other structures. Because of the variability of the material, a typical profile is not given.

Use and Management Considerations

Onsite investigation is needed to determine the suitability of any area for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: None assigned
Virginia soil management group: None assigned
Hydric soils: Unranked

42E—Weikert-Berks complex, 35 to 70 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills and mountains
Position on the landform: Backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Note: These Weikert and Berks soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Weikert and similar soils: Typically 40 percent, ranging from about 30 to 50 percent
Berks and similar soils: Typically 35 percent, ranging from about 25 to 45 percent

Typical Profile

Weikert

Surface layer:
0 to 2 inches—dark yellowish brown very channery silt loam

Subsoil:
2 to 12 inches—yellowish brown extremely channery silt loam

Hard bedrock:
12 inches—shale bedrock

Berks

Organic layer:
0 to 2 inches—slightly decomposed plant material

Surface layer:
2 to 5 inches—brown very channery silt loam

Subsoil:
5 to 15 inches—yellowish brown channery silt loam
15 to 26 inches—brownish yellow very channery silt loam

Substratum:
26 to 28 inches—strong brown extremely channery silt loam

Hard bedrock:
28 inches—shale bedrock

Minor Components

- Lily soils and soils that have more clay in the subsoil than the Weikert and Berks soils; on summits, shoulders, and backslopes
- Shelocta soils, which formed in colluvium; on footslopes

Soil Properties and Qualities

Available water capacity: Weikert—very low (about 0.4 inch); Berks—very low (about 2.7 inches)
Slowest saturated hydraulic conductivity: Weikert—high (about 2.0 in/hr); Berks—moderately high (about 0.6 in/hr)
Depth class: Weikert—shallow (10 to 20 inches); Berks—moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Weikert—10 to 20 inches to bedrock (lithic); Berks—20 to 40 inches to bedrock (lithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from shale interbedded with siltstone and from sandstone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pasture.

Woodland

Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.

Figure 10.—Grass-legume hay in area of Wheeling loam, 2 to 7 percent slopes, rarely flooded. This soil is one of the best in the survey area for crop production.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soils: No

43B—Wheeling loam, 2 to 7 percent slopes, rarely flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Stream terraces along the Middle and South Forks of the Holston River (figs. 10 and 11)

Position on the landform: Treads
Size of areas: 5 to 150 acres

Map Unit Composition

Wheeling and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 9 inches—brown loam

Subsoil:
9 to 36 inches—brown clay loam; black manganese coatings
36 to 49 inches—dark yellowish brown sandy clay loam; black manganese coatings
49 to 62 inches—dark yellowish brown sandy loam

Minor Components

- Derroc, Sindion, and Speedwell soils, which are on flood plains
- Frederick soils, which have more clay in the subsoil than the Wheeling soil; on backslopes of hills
- Shottower soils, which have more clay in the subsoil than the Wheeling soil; on high stream terrace risers
- Moderately well drained soils in concave positions
- Some areas of soils that have a gravelly or cobbly surface layer or that have slopes of more than 7 percent

Figure 11.—Grass-legume hay in an area of Wheeling loam, 2 to 7 percent slopes, rarely flooded. Areas of Shottower loam, 7 to 15 percent slopes, and Frederick silt loam, 7 to 15 percent slopes, are on hills on uplands in the background.

Soil Properties and Qualities

Available water capacity: High (about 9.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: Rare
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Alluvium derived from limestone, sandstone, siltstone, and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding is a limitation affecting building site development.

Septic tank absorption fields

- This soil is well suited to septic tank absorption fields.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: A
Hydric soil: No

44B—Wheeling-Urban land complex, 2 to 7 percent slopes, rarely flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Stream terraces along the Middle and South Forks of the Holston River
Position on the landform: Treads
Size of areas: 5 to 250 acres
Note: Small areas of disturbed Wheeling soils that have been cut, filled, or graded occur in some map unit delineations. In some areas as much as 30 feet of fill have been added or as much as 50 percent of the soil profile has been removed. The fill material is mostly from the surrounding Wheeling soils, which have been cut and graded. Some areas have soils that occur on slopes of less than 2 percent.

Map Unit Composition

Note: This Wheeling soil and Urban land occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wheeling and similar soils: Typically 50 percent, ranging from about 40 to 60 percent
Urban land: Typically 30 percent, ranging from about 20 to 40 percent

Typical Profile

Wheeling

Surface layer:
0 to 9 inches—brown loam

Subsoil:
9 to 36 inches—brown clay loam; black manganese coatings
36 to 49 inches—dark yellowish brown sandy clay loam; black manganese coatings
49 to 62 inches—dark yellowish brown sandy loam

Urban land

This part of the map unit consists of land that has been covered by highways, streets, parking lots, buildings, and other structures. Because of the variability of the material, a typical profile is not given.

Minor Components

- Derroc, Sindion, and Speedwell soils, which are on flood plains
- Shottower soils, which have more clay in the subsoil than the Wheeling soil; on high stream terraces
- Areas of soils that have a gravelly or cobbly surface layer
- Areas of moderately well drained soils in concave positions

Properties and Qualities of the Wheeling Soil

Available water capacity: High (about 9.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: Rare
Ponding hazard: None

Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Alluvium derived from limestone, sandstone, siltstone, and shale

Use and Management Considerations

Cropland

- This map unit is unsuited to cropland.

Pastureland

- This map unit is unsuited to pasture.

Building sites

- Flooding is a limitation affecting building site development.

Septic tank absorption fields

- This map unit is well suited to septic tank absorption fields.

Local roads and streets

- The low soil strength may cause structural damage to local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 8s
Virginia soil management group: Wheeling—A; Urban land—none assigned
Hydric soils: No

45A—Wolfgap clay loam, 0 to 2 percent slopes, occasionally flooded

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Flood plains along the North Fork of the Holston River
Position on the landform: Flood-plain steps
Size of areas: 5 to 200 acres

Map Unit Composition

Wolfgap and similar soils: Typically 75 percent, ranging from about 65 to 85 percent

Typical Profile

Surface layer:
0 to 11 inches—dark brown clay loam

Subsoil:
11 to 35 inches—yellowish brown sandy clay loam
35 to 58 inches—strong brown sandy clay loam

Substratum:
58 to 72 inches—strong brown extremely gravelly fine sandy loam

Minor Components

- Botetourt and Ingledove soils, which are on treads of stream terraces above areas of the Wolfgap soil
- Derroc soils, which have more rock fragments in the soil than the Wolfgap soil; in similar positions
- Shottower soils, which have more clay in the subsoil than the Wolfgap soil; on high stream terrace risers

Soil Properties and Qualities

Available water capacity: Moderate (about 8.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: Occasional
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Surface fragments: None
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.
- Flooding may damage crops.

Pastureland

Suitability: Well suited
- Flooding may damage pastures.

Woodland

Suitability: Well suited to northern red oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside management zones and stream crossings and should include general adherence to all applicable Best Management Practices (BMPs).
- Flooding may damage haul roads and restricts the safe use of log trucks.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- Flooding is a limitation affecting building site development.

Septic tank absorption fields

- Flooding is a limitation affecting septic tank absorption fields.

Local roads and streets

- Flooding may damage local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 1
Virginia soil management group: A
Hydric soil: No

46C—Wurno-Newbern complex, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Summits and shoulders
Size of areas: 5 to 100 acres

Map Unit Composition

Note: These Wurno and Newbern soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wurno and similar soils: Typically 45 percent, ranging from about 35 to 55 percent
Newbern and similar soils: Typically 30 percent, ranging from about 20 to 40 percent

Typical Profile

Wurno

Surface layer:
0 to 5 inches—dark brown silt loam

Subsoil:
5 to 11 inches—yellowish brown channery silt loam
11 to 22 inches—yellowish brown very channery silt loam

Substratum:
22 to 29 inches—yellowish brown extremely channery silt loam

Soft bedrock:
29 to 33 inches—brownish yellow bedrock

Hard bedrock:
33 inches—interbedded calcareous shale and limestone bedrock

Newbern

Surface layer:
0 to 4 inches—brown silt loam

Subsoil:
4 to 11 inches—yellowish brown channery silt loam

Soft bedrock:
11 to 15 inches—yellowish brown bedrock

Hard bedrock:
15 inches—shale interbedded with limestone bedrock

Minor Components

- Carbo and Frederick soils, which have more clay in the subsoil than the Wurno and Newbern soils; in similar positions

- Westmoreland soils, which are deep; in positions similar to those of the Wurno and Newbern soils
- Marbie and Wyrick soils, which formed in colluvium in depressions and drainageways
- Areas of rock outcrops and areas of soils that are similar to the Wurno and Newbern soils but that have a red subsoil

Soil Properties and Qualities

Available water capacity: Wurno—very low (about 2.9 inches); Newbern—very low (about 1.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Wurno—moderately deep (20 to 40 inches); Newbern—shallow (10 to 20 inches)
Depth to root-restrictive feature: Wurno—20 to 40 inches to bedrock (paralithic and lithic); Newbern—10 to 20 inches to bedrock (lithic)
Drainage class: Wurno—well drained; Newbern—somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Wurno—residuum weathered from interbedded calcareous shale and limestone; Newbern—residuum weathered from shale interbedded with limestone

Use and Management Considerations

Cropland

Suitability: Moderately suited to wheat and grass-legume hay; poorly suited to corn and soybeans; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock restricts the rooting depth of crops.
- The limited available water capacity may cause plants to suffer from moisture stress.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Well suited to Virginia pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.

- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Wurno—3e; Newbern—4s
Virginia soil management group: JJ
Hydric soils: No

46D—Wurno-Newbern complex, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Note: These Wurno and Newbern soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wurno and similar soils: Typically 45 percent, ranging from about 35 to 55 percent
Newbern and similar soils: Typically 30 percent, ranging from about 20 to 40 percent

Typical Profile

Wurno

Surface layer:
0 to 5 inches—dark brown silt loam

Subsoil:
5 to 11 inches—yellowish brown channery silt loam
11 to 22 inches—yellowish brown very channery silt loam

Substratum:
22 to 29 inches—yellowish brown extremely channery silt loam

Soft bedrock:
29 to 33 inches—brownish yellow bedrock

Hard bedrock:
33 inches—interbedded calcareous shale and limestone bedrock

Newbern

Surface layer:
0 to 4 inches—brown silt loam

Subsoil:
4 to 11 inches—yellowish brown channery silt loam

Soft bedrock:
11 to 15 inches—yellowish brown bedrock

Hard bedrock:
15 inches—shale interbedded with limestone bedrock

Minor Components

- Carbo and Frederick soils, which have more clay in the subsoil than the Wurno and Newbern soils; in similar positions
- Westmoreland soils, which are deep; in positions similar to those of the Wurno and Newbern soils
- Marbie and Wyrick soils, which formed in colluvium; in depressions and drainageways
- Small areas of rock outcrops and areas of soils that are similar to the Wurno and Newbern soils but that have a red subsoil

Soil Properties and Qualities

Available water capacity: Wurno—very low (about 2.9 inches); Newbern—very low (about 1.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Wurno—moderately deep (20 to 40 inches); Newbern—shallow (10 to 20 inches)
Depth to root-restrictive feature: Wurno—20 to 40 inches to bedrock (paralithic and lithic); Newbern—10 to 20 inches to bedrock (lithic)
Drainage class: Wurno—well drained; Newbern—somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Wurno—residuum weathered from interbedded calcareous shale and limestone; Newbern—residuum weathered from shale interbedded with limestone

Use and Management Considerations

Cropland

Suitability: Poorly suited to corn, soybeans, wheat, and grass-legume hay; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock restricts the rooting depth of crops.
- The limited available water capacity may cause plants to suffer from moisture stress.

- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Poorly suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Because of the limited available water capacity, plants may suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

Woodland

Suitability: Well suited to Virginia pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: JJ
Hydric soils: No

46E—Wurno-Newbern complex, 25 to 65 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Hills
Position on the landform: Backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Note: These Wurno and Newbern soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wurno and similar soils: Typically 45 percent, ranging from about 35 to 55 percent
Newbern and similar soils: Typically 30 percent, ranging from about 20 to 40 percent

Typical Profile

Wurno

Surface layer:
0 to 5 inches—dark brown silt loam

Subsoil:
5 to 11 inches—yellowish brown channery silt loam
11 to 22 inches—yellowish brown very channery silt loam

Substratum:
22 to 29 inches—yellowish brown extremely channery silt loam

Soft bedrock:
29 to 33 inches—brownish yellow bedrock

Hard bedrock:
33 inches—interbedded calcareous shale and limestone bedrock

Newbern

Surface layer:
0 to 4 inches—brown silt loam

Subsoil:
4 to 11 inches—yellowish brown channery silt loam

Soft bedrock:
11 to 15 inches—yellowish brown bedrock

Hard bedrock:
15 inches—shale interbedded with limestone bedrock

Minor Components

- Carbo and Frederick, which have more clay in the subsoil than the Wurno and Newbern soils; in similar positions
- Westmoreland soils, which are deep; in positions similar to those of the Wurno and Newbern soils
- Marbie and Wyrick soils, which formed in colluvium; in depressions and drainageways
- Small areas of rock outcrops and areas of soils that are similar to the Wurno and Newbern soils but that have a red subsoil

Soil Properties and Qualities

Available water capacity: Wurno—very low (about 2.9 inches); Newbern—very low (about 1.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.6 in/hr)
Depth class: Wurno—moderately deep (20 to 40 inches); Newbern—shallow (10 to 20 inches)
Depth to root-restrictive feature: Wurno—20 to 40 inches to bedrock (paralithic and lithic); Newbern—10 to 20 inches to bedrock (lithic)
Drainage class: Wurno—well drained; Newbern—somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Wurno—residuum weathered from interbedded calcareous shale and limestone; Newbern—residuum weathered from shale interbedded with limestone

Use and Management Considerations

Cropland

- These soils are unsuited to cropland.

Pastureland

- These soils are unsuited to pasture.

Woodland

Suitability: Well suited to Virginia pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.

Figure 12.—An area of Wyrick-Marbie complex, 2 to 7 percent slopes, used in the production of grass-legume hay and tobacco. Pasture on Wurno-Newbern complex, 25 to 65 percent slopes, and on Frederick silt loam, 15 to 25 percent slopes, is in the background.

Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing the effluent distribution lines is increased.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: JJ
Hydric soils: No

47B—Wyrick-Marbie complex, 2 to 7 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Intermittent drainageways and depressions in valleys located at the base of hills (fig. 12)
Position on the landform: Concave toeslopes and footslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Note: These Wyrick and Marbie soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wyrick and similar soils: Typically 40 percent, ranging from about 30 to 50 percent
Marbie and similar soils: Typically 35 percent, ranging from about 25 to 45 percent

Typical Profile

Wyrick

Surface layer:
0 to 9 inches—dark yellowish brown silt loam

Subsoil:
9 to 17 inches—yellowish brown silt loam
17 to 51 inches—strong brown silty clay loam; yellowish brown mottles and iron-manganese nodules
51 to 62 inches—strong brown silty clay; iron-manganese nodules and manganese coatings

Marbie

Surface layer:
0 to 11 inches—brown silt loam; iron-manganese nodules

Subsoil:
11 to 21 inches—yellowish brown silt loam; iron-manganese nodules
21 to 62 inches—yellowish brown silty clay loam; iron-manganese nodules and light gray iron depletions

Minor Components

- Carbo, Frederick, and Wurno soils, which formed in residuum on summits and shoulders
- Timberville soils, which formed in drainageways in colluvium and alluvium derived from limestone, shale, and sandstone
- Areas of rock outcrops and areas of soils that have a gravelly surface layer

Soil Properties and Qualities

Available water capacity: Wyrick—high (about 9.6 inches); Marbie—low (about 4.4 inches)
Slowest saturated hydraulic conductivity: Wyrick—moderately high (about 0.6 in/hr); Marbie—moderately low (about 0.06 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: Wyrick—more than 60 inches; Marbie—18 to 36 inches to a fragipan
Drainage class: Wyrick—well drained; Marbie—moderately well drained
Depth to seasonal water saturation: Wyrick—more than 6 feet; Marbie—about 24 to 48 inches
Water table kind: Wyrick—none; Marbie—perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Wyrick—medium; Marbie—high
Surface fragments: None
Parent material: Colluvium and alluvium derived from limestone, shale, siltstone, and fine-grained sandstone over residuum weathered from limestone and shale

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The dense soil material restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited

- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The dense soil layer may restrict the rooting depth of plants.

Woodland

Suitability: Well suited to northern red oak; moderately suited to yellow-poplar

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- The limited depth to a fragipan affects the ease of excavation and grading.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: Wyrick—G; Marbie—W
Hydric soils: No

47C—Wyrick-Marbie complex, 7 to 15 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Intermittent drainageways and depressions in valleys located at the base of hills
Position on the landform: Concave toeslopes and footslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Note: These Wyrick and Marbie soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wyrick and similar soils: Typically 40 percent, ranging from about 30 to 50 percent
Marbie and similar soils: Typically 35 percent, ranging from about 25 to 45 percent

Typical Profile

Wyrick

Surface layer:
0 to 9 inches—dark yellowish brown silt loam

Subsoil:
9 to 17 inches—yellowish brown silt loam
17 to 51 inches—strong brown silty clay loam; yellowish brown mottles and iron-manganese nodules
51 to 62 inches—strong brown silty clay; iron-manganese nodules and manganese coatings

Marbie

Surface layer:
0 to 11 inches—brown silt loam; iron-manganese nodules

Subsoil:
11 to 21 inches—yellowish brown silt loam; iron-manganese nodules
21 to 62 inches—yellowish brown silty clay loam; iron-manganese nodules and light gray iron depletions

Minor Components

- Carbo, Frederick, and Wurno soils, which formed in residuum; on summits and shoulders
- Timberville soils, which formed in drainageways in colluvium and alluvium derived from limestone, shale, and sandstone
- Areas of rock outcrops and areas of soils that have a gravelly surface layer

Soil Properties and Qualities

Available water capacity: Wyrick—high (about 9.6 inches); Marbie—low (about 4.4 inches)
Slowest saturated hydraulic conductivity: Wyrick—moderately high (about 0.6 in/hr); Marbie—moderately low (about 0.06 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: Wyrick—more than 60 inches; Marbie—18 to 36 inches to a fragipan
Drainage class: Wyrick—well drained; Marbie—moderately well drained

Depth to seasonal water saturation: Wyrick—more than 6 feet; Marbie—about 24 to 48 inches
Water table kind: Wyrick—none; Marbie—perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Wyrick—medium; Marbie—high
Surface fragments: None
Parent material: Colluvium and alluvium derived from limestone, shale, siltstone, and fine-grained sandstone over residuum weathered from limestone and shale

Use and Management Considerations

Cropland

Suitability: Well suited to wheat and grass-legume hay; moderately suited to corn, soybeans, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The dense soil material restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The dense soil layer may restrict the rooting depth of plants.

Woodland

Suitability: Well suited to northern red oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope creates unsafe operating conditions, reduces the operating efficiency of log trucks, and may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- The limited depth to a fragipan affects the ease of excavation and grading.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: Wyrick—G; Marbie—W
Hydric soils: No

47D—Wyrick-Marbie complex, 15 to 25 percent slopes

Setting

Major land resource area: Southern Appalachian Ridges and Valleys (MLRA 128)
Landform: Intermittent drainageways and depressions in valleys located at the base of hills
Position on the landform: Concave toeslopes and footslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Note: These Wyrick and Marbie soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Wyrick and similar soils: Typically 40 percent, ranging from about 30 to 50 percent
Marbie and similar soils: Typically 35 percent, ranging from about 25 to 45 percent

Typical Profile

Wyrick

Surface layer:
0 to 9 inches—dark yellowish brown silt loam

Subsoil:
9 to 17 inches—yellowish brown silt loam
17 to 51 inches—strong brown silty clay loam; yellowish brown mottles and iron-manganese nodules
51 to 62 inches—strong brown silty clay; iron-manganese nodules and manganese coatings

Marbie

Surface layer:
0 to 11 inches—brown silt loam; iron-manganese nodules

Subsoil:
11 to 21 inches—yellowish brown silt loam; iron-manganese nodules
21 to 62 inches—yellowish brown silty clay loam; iron-manganese nodules and light gray iron depletions

Minor Components

- Carbo, Frederick, and Wurno soils, which formed in residuum on backslopes
- Timberville soils, which formed in drainageways in colluvium and alluvium derived from limestone, shale, and sandstone
- Also included are areas of rock outcrops and areas of soils that have a gravelly surface layer

Soil Properties and Qualities

Available water capacity: Wyrick—high (about 9.6 inches); Marbie—low (about 4.4 inches)
Slowest saturated hydraulic conductivity: Wyrick—moderately high (about 0.6 in/hr); Marbie—moderately low (about 0.06 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: Wyrick—more than 60 inches; Marbie—18 to 36 inches to a fragipan
Drainage class: Wyrick—well drained; Marbie—moderately well drained
Depth to seasonal water saturation: Wyrick—more than 6 feet; Marbie—about 24 to 48 inches
Water table kind: Wyrick—none; Marbie—perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Wyrick—high; Marbie—very high
Surface fragments: None
Parent material: Colluvium and alluvium derived from limestone, shale, siltstone, and fine-grained sandstone over residuum weathered from limestone and shale

Use and Management Considerations

Cropland

Suitability: Well suited to grass-legume hay; moderately suited to corn, soybeans, wheat, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The dense soil material restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The dense soil layer may restrict the rooting depth of plants.

Woodland

Suitability: Well suited to northern red oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable Best Management Practices (BMPs).
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.

- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- The limited depth to a fragipan affects the ease of excavation and grading.
- Because of shrinking and swelling, the use of the soil as base material for local roads and streets is restricted.
- The low soil strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: Wyrick—G; Marbie—W
Hydric soils: No

W—Water

This map unit is in the Southern Appalachain Ridges and Valleys major land resource area (MLRA 128). It includes ponds, lakes, creeks, rivers, and reservoirs.

This map unit is not assigned any interpretive groups.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for agricultural waste management. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of gravel, sand, reclamation material, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

Duncan McGregor, District Conservationist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, and the system of land capability classification used by the Natural Resources Conservation Service is explained.

Effective pasture management practices include maintaining a mixture of grasses and legumes, rotating pasture, deferring grazing, controlling undesirable vegetation, and using proper stocking rates.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Most soils in Smyth County have low or medium natural fertility. These soils require liming and fertilizing to achieve a desired level of productivity. Frederick and Austinville soils are silty and clayey and retain more plant nutrients, especially nitrogen, as compared to the sandy Derroc or Lily soils. On sandy soils, fertilizers need to be applied in several, small amounts rather than in a single, large amount because they rapidly leach downward into the ground water.

Most soils in the county have low or moderate organic matter content. Although the organic matter content is low, it helps in retaining both plant nutrients and water and in preventing soil crusting and surface compaction. The organic matter content is difficult to increase significantly; however, organic matter levels can be maintained. Applying manure, using cover crops, and incorporating crop residue into the surface layer of the soil help to maintain organic matter content.

Good tilth in the topsoil is important for good seed germination and growth. Soils that have surface layers of loam, sandy loam, or silt loam can be tilled throughout a wide range of moisture conditions. Soils that have surface layers of silty clay loam have a narrower range of moisture content for good workability. Soils that have moisture levels that are too high have increased surface compaction and runoff, which restrict root penetration.

Soil loss from agricultural lands represents the greatest source of sediment in Smyth County. Erosion occurs in cropped areas where the slope is greater than 15 percent. Cropland management and conservation practices are needed to control erosion. Management practices include crop rotation, stripcropping, grassed waterways, no-till planting, and the use of cover crops.

Conservation practices are needed on much of the pasture and hayland in the county, especially in areas with steep slopes. Severe erosion can result when areas are overgrazed or when conservation practices are not applied properly. Rotational grazing, brush control, liming and fertilizing, and overseeding help to control erosion

on pasture and hayland. The soils on steep slopes also have severe limitations that restrict their use to wildlife habitat or woodland.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the tables because of variations in rainfall and other climatic factors. The land capability classification and the Virginia Soil Management Group of map units in the survey area also is shown in the table.

The yields are on based VALUES—the Virginia Agronomic Land Use Evaluation System *(20)*. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

Realistic yield goals can be maintained over a long-term basis through proper nutrient management and other soil amendments such as lime. Applications of nitrogen and phosphorus from organic and inorganic forms should be done according to approved nutrient management practices and regulations.

Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit *(17)*. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, forestland, wildlife habitat, or recreation.

The capability classification of the soils in this survey area is given in the section “Detailed Soil Map Units” and in table 5.

Virginia Soil Management Groups

The Virginia Agronomic Land Use Evaluation System (VALUES) is a system that ranks soils for management and productivity *(20)*. VALUES places each soil series in Virginia into one of 43 management groups. The format of the management groups, A through QQ, include the following soil characteristics—regional occurrence; parent material; landscape position or influence; solum thickness; dominant profile features, such as texture; available water capacity for plants; and internal soil drainage. Yields that are both economically and environmentally feasible were assigned to each management group, based on yields of field trial crop data and research. The following paragraphs describe the soil management groups in Smyth County.

Group A. The soils of this group formed in alluvial parent materials and are on gently sloping flood plains or stream terraces which have watersheds that originate west of the Blue Ridge. These soils are deep or very deep and are medium textured throughout. They have a high available water capacity and are well drained.

Group B. The soils of this group formed in alluvial parent materials and are on gently sloping flood plains or stream terraces which have watersheds that originate west of the Blue Ridge. These soils are deep or very deep and are medium textured throughout. They have a high available water capacity and are moderately well drained.

Group G. The soils of this group formed in locally transported, medium textured sediments of either colluvial or alluvial origin that overlie a wide range of residual materials. These soils are in landscape positions that include footslopes and

toeslopes, the heads of drainageways, depressions, and narrow upland drainageways. They are deep and very deep. They are silty to loamy in the upper part of the subsoil, which is underlain with clayey to stony materials. They have a moderately high available water capacity and are moderately well drained or somewhat poorly drained.

Group H. The soils of this group formed in alluvium along streams or terraces. These soils are moderately deep to very deep, have silty to clay loam subsurface layers, and have a moderately high available water capacity. They are somewhat poorly drained or poorly drained, unless artificial drainage is provided. If artificial drainage is provided, the productive capacity of these soils is significantly increased.

Group L. The soils of this group formed from old transported deposits of alluvium or colluvium. These soils are common on stream terraces, footslopes, and older, elevated, upland landscapes that were once stream terraces. They are deep or very deep, have medium textured surface layers, have more clayey subsurface layers, and commonly contain gravel and rounded stones. They have a moderate or high available water capacity and typically are well drained.

Group M. The soils of this group formed in material weathered from carbonate rocks. These soils are on upland summits and side slopes. They are deep or very deep. They have reddish brown clayey subsurface layers that contain coarse fragments in some areas. They have a moderate available water capacity, unless the content of coarse fragments is significantly high, and they are well drained.

Group O. The soils of this group formed from transported materials ranging from mountain colluvium to old alluvium on dissected uplands and deposits on old elevated river terraces. These soils are very deep to shallow. They have very dark red clayey subsurface layers, which have significant amounts of coarse fragments in some areas. They have a moderate available water capacity and are well drained.

Group U. The soils of this group formed from a variety of residual parent materials ranging from Triassic sediments to sandstone, shale, and limestone to colluvium from these materials. These soils are moderately deep to shallow and commonly have fine-loamy subsurface layers. They commonly have coarse fragments making up one-third of the soil volume and, as a result, have a moderate or moderately low available water capacity. They are well drained or moderately well drained.

Group W. The soils of this group formed from mixed colluvium on stream terraces or footslopes. These soils have fragipans within the upper 3 feet of soil and typically have loamy subsurface horizons, commonly with accompanying coarse fragments. As a result, they have a moderately low available water capacity. They are moderately well drained or somewhat poorly drained.

Group Y. The soils of this group formed from the residuum of weathered limestone, shale, or other carbonate-influenced rocks. These soils are shallow to moderately deep and represent upland landscapes. They have clayey subsurface layers, which contain coarse fragments in some areas. They have a moderate or low available water capacity where they are shallow to bedrock, and they are mostly well drained.

Group CC. The soils of this group formed in a range of parent materials that include alluvium and colluvium. These soils occur on a variety of landscapes, including uplands, stream terraces, colluvial areas, and bottomlands. They commonly have a moderately deep solum, are very deep to bedrock, have clayey-skeletal to coarse-loamy subsurface layers (with as much as 70 percent coarse fragments in some areas), and have a moderately low available water capacity. They are well drained.

Group FF. The soils of this group formed in sandstone and shale residual parent materials and mountain colluvium. These soils are on steeply dissected uplands and mountain side slopes. They are moderately shallow. They mostly have loamy-skeletal subsurface layers, which may contain 80 percent, or more, coarse fragments. As a result, the available water capacity is low or very low. The soils are well drained or moderately well drained.

Group GG. The soils of this group formed in cherty limestone or other residuum. These soils are on ridgetops and side slopes. They are very deep to moderately deep. They have loamy-skeletal subsurface layers, which may contain 60 percent, or more, coarse fragments. As a result, the available water capacity is low. The soils are well drained.

Group HH. The soils of this group formed in loamy alluvial sediments. These soils are on flood plains. They are moderately deep, have fine-loamy or clayey subsurface layers, and have a moderate available water capacity. The soils are moderately well drained to poorly drained.

Group JJ. The soils of this group formed from a wide variety of residual parent materials, ranging from sandstone, shale, and limestone to phyllite or schist. These soils are shallow to moderately deep, are dominantly loamy-skeletal throughout, and contain 30 to 70 percent coarse fragments. This group includes some very deep soils if the natural soil porosity has been disturbed. The soils of this group have a very low available water capacity and are well drained.

Group NN. The soils of this group are undrained. These soils formed in alluvium along streams or on terraces. They are moderately deep to very deep, have silty to clay loam subsurface layers, have a moderately high available water capacity, and are somewhat poorly drained or poorly drained.

The management groups for the map units in the survey area are given in the section “Detailed Soil Map Units” and in table 5.

Prime Farmland

Table 6 lists the map units in the survey area that are considered prime farmland. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation’s food supply.

Prime farmland is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 13,000 acres in the survey area, or nearly 6 percent of the total acreage, meets the soil requirements for prime farmland. Areas of prime farmland are scattered throughout the county, but most are in the three major valleys in the county.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

For some soils identified in table 6 as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

Hydric Soils

This section lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site *(6, 8)*.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology *(3, 8, 10, 11)*. Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part *(4)*. These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established *(5)*. These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” *(16)* and “Keys to Soil Taxonomy” *(15)* and in the “Soil Survey Manual” *(18)*.

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in “Field Indicators of Hydric Soils in the United States” *(6)*.

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

The following map units meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This information can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site *(6, 8)*.

25A Maurertown silt loam, 0 to 2 percent slopes, occasionally flooded
26A Melvin silt loam, 0 to 2 percent slopes, frequently flooded

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The following map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

4B Botetourt loam, 2 to 7 percent slopes, rarely flooded
4C Botetourt loam, 7 to 15 percent slopes
33A Sindion silt loam, 0 to 2 percent slopes, occasionally flooded

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Table 7, parts I, II, and III, show the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of this table, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the table are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The

ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table,

ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Overland flow of wastewater is a process in which wastewater is applied to the upper reaches of sloped land and allowed to flow across vegetated surfaces, sometimes called terraces, to runoff-collection ditches. The length of the run generally is 150 to 300 feet. The application rate ranges from 2.5 to 16.0 inches per week. It commonly exceeds the rate needed for irrigation of cropland. The wastewater leaves solids and nutrients on the vegetated surfaces as it flows downslope in a thin film. Most of the water reaches the collection ditch, some is lost through evapotranspiration, and a small amount may percolate to the ground water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, and the design and construction of the system. Reaction and the cation-exchange capacity affect absorption. Reaction, salinity, and the sodium adsorption ratio affect plant growth and microbial activity. Slope, permeability, depth to a water table, ponding, flooding, depth to bedrock or a cemented pan, stones, and cobbles affect design and construction. Permanently frozen soils are unsuitable for waste treatment.

Rapid infiltration of wastewater is a process in which wastewater applied in a level basin at a rate of 4 to 120 inches per week percolates through the soil. The wastewater may eventually reach the ground water. The application rate commonly exceeds the rate needed for irrigation of cropland. Vegetation is not a necessary part of the treatment; hence, the basins may or may not be vegetated. The thickness of the soil material needed for proper treatment of the wastewater is more than 72 inches. As a result, geologic and hydrologic investigation is needed to ensure proper design and performance and to determine the risk of ground-water pollution.

The ratings in the table are based on the soil properties that affect the risk of pollution and the design, construction, and performance of the system. Depth to a water table, ponding, flooding, and depth to bedrock or a cemented pan affect the risk of pollution and the design and construction of the system. Slope, stones, and cobbles also affect design and construction. Permeability and reaction affect performance. Permanently frozen soils are unsuitable for waste treatment.

Slow rate treatment of wastewater is a process in which wastewater is applied to land at a rate normally between 0.5 inch and 4.0 inches per week. The application rate commonly exceeds the rate needed for irrigation of cropland. The applied wastewater is treated as it moves through the soil. Much of the treated water may percolate to the ground water, and some enters the atmosphere through evapotranspiration. The applied water generally is not allowed to run off the surface. Waterlogging is prevented either through control of the application rate or through the use of tile drains, or both.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, and the application of waste. The properties that affect absorption include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, depth to bedrock or a cemented pan, reaction, the cation-exchange capacity, and slope. Reaction, the sodium adsorption ratio, salinity, and bulk density affect plant growth and microbial activity. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Forestland Productivity and Management

Harold D. Hannah, Regional Forester, Virginia Department of Forestry, helped to prepare this section.

Oak-hickory forests once covered most of Smyth County. During settlement, forests were cleared for cultivated crops and pasture. The fertile limestone valleys and ridges were cleared first. Eventually, many steep knobs and the lower slopes of the larger mountains were cleared and farmed. Land that is mostly rough, steep, and inaccessible was left in forest.

The demand for lumber and wood products began about 1900. The best timber was removed from all the remaining forest. Blight destroyed the American chestnut in the 1920's. At about the same time, agricultural land began to revert to forest. Light-seeded species, including yellow-poplar, ash, black locust, maple, and pine, invaded abandoned farmland and areas of chestnut trees. Eastern redcedar has invaded some fields. Agricultural land reverting to forest was a contining trend until about 1976, when urban development began to decrease the acreage of both forestland and farmland.

In 1986, about 60 percent of Smyth County was covered mostly by second-growth oak, hickory, yellow-poplar, and other hardwoods. White pine grows in the southern part of the county, often in pure stands but also mixed with hardwoods. Southern yellow pine occurs on south-facing slopes in pure stands on old fields and in scattered patches high on south- and west-facing slopes of mountains and hills.

Mount Rogers is both the highest point in Virginia and the only location of natural stands of Fraser fir in Virginia. Fraser fir is mixed with red spruce, birch, and sugar maple. Although it is being wiped out in natural stands by the balsam wooly aphid and acid fog, it is cultivated on Christmas tree plantations.

The quality of trees in Smyth County varies from excellent in moist coves and on north-facing, lower slopes to very poor on dry, high ridgetops and west-facing slopes. The quality has been affected by wildfire and by high-grading harvests, which periodically removed only the best stems of certain species. As a result, in some areas a high percentage of trees are unsuitable for lumber. A recent improvement in the market for trees should allow more of the best stems to be utilized. It should also make way for new forests of young, better quality trees.

The tables described in this section can help forest owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of forestland management.

Forestland Productivity

In table 8, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual" *(13)*, which is available at the local office of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Forestland Management

In table 9, parts I through V, interpretive ratings are given for various aspects of forestland management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified aspect of forestland management. *Well suited* indicates that the soil has features that are favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified management aspect. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified management aspect or that extreme measures are needed to overcome the undesirable soil properties.

Proper planning for timber harvesting is essential to minimize the potential impact to soil and water quality. A harvest plan should include logging roads, log decks, streamside management zones, stream crossings, skid trails, schedule of activities, and Best Management Practices (BMPs) for each activity. Forests should be managed to increase economic and environmental benefits. A forest stewardship plan should be developed to guide management and utilization of the woodlands.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for fire damage and seedling mortality are expressed as *low, moderate,* and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual" *(13)*, which is available at the local office of the Natural Resources Conservation Service or on the Internet.

For *limitations affecting construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or more limitations can cause some difficulty in construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forest equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

Ratings in the column *hazard of off-road or off-trail erosion* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Recreational Development

Recreational areas in Smyth County include the Clinch Mountain Wildlife Management Area, the forks of the Holston River, the Appalachian Trail, Hungry Mother State Park, and parts of the Jefferson National Forest. These areas provide opportunities for boating, fishing, swimming, hunting, hiking, and camping.

In table 10, parts I and II, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the table are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in this table can be supplemented by other information in this survey, for example, interpretations for dwellings without basements, for local roads and streets, and for septic tank absorption fields.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns

affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

Smyth County provides habitat for many species of wildlife. White-tailed deer, black bear, wild turkey, ruffed grouse, raccoon, fox squirrel, and gray squirrel are common in wooded, mountainous areas, especially on Lily, Drypond, Dekalb, and Berks soils. Cottontail, quail, mourning dove, and woodcock inhabit upland pastures and open fields throughout the county. Mallard, wood duck, black duck, Canadian goose, and blue-winged teal inhabit wetlands on Melvin soils during migration periods.

Smallmouth bass, rock bass, catfish, bluegill, and yellow perch inhabit the forks of the Holston River and all major streams. Stocked trout fishing is permitted in season. Native brook trout inhabit some remote mountain streams. Bass, bluegill, and crappie are plentiful in Hungry Mother Lake.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary

facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading “Soil Properties.”

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, reclamation material, roadfill, and topsoil; plan structures for water management; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Table 11, parts I and II, show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected.

Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Table 12, parts I and II, show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in

contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a

water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials

Table 13, parts I and II, give information about the soils as potential sources of gravel, sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and *sand* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 13, part I, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

In table 13, part II, the rating class terms are *good, fair,* and *poor*. The features that limit the soils as sources of reclamation material, roadfill, and topsoil are specified in the table. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of these materials. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5

feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in the tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Soil Properties

Table 15 gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional

refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Physical Soil Properties

Table 16 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$- or $^1/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity refers to the ability of a soil to transmit water or air. The term “permeability,” as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in

micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the “National Soil Survey Handbook” *(14)*, which is available at the local office of the Natural Resources Conservation Service or on the Internet.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion.

There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Soil Properties

Table 17 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have a pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Water Features

Table 18 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. It is assumed that the surface of the soil is bare and that the retention of surface water

resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top *(upper limit)* and base *(lower limit)* of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 19 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root

environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness of the restrictive layer, which significantly affects the ease of excavation.

Depth to top is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(15, 16)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is very fine, mixed, active, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in

the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(18)* and in the "Field Book for Describing and Sampling Soils" *(9)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(16)* and in "Keys to Soil Taxonomy" *(15)*. Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Austinville Series

Physiographic province: Valley and Ridge
Landform: Hills
Parent material: Residuum weathered from dolomitic limestone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 45 percent

Associated Soils

- Well drained Chiswell, Groseclose, Litz, Tumbling, and Shelocta soils, which typically are not as red throughout as the Austinville soils

Taxonomic Classification

Fine, mixed, subactive, mesic Rhodic Paleudults

Typical Pedon

Austinville silty clay loam, 7 to 15 percent slopes; about 1.1 miles east-northeast of the junction of Highways VA-614 and VA-612 near Cedar Springs, 0.1 mile northeast of Blue Spring; Cedar Springs, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 48 minutes 1 second N. and long. 81 degrees 19 minutes 38 seconds W.

Ap—0 to 6 inches; dark reddish brown (5YR 3/4) silty clay loam; moderate fine and medium granular structure; friable, moderately sticky, slightly plastic; many fine and medium roots; moderately acid; abrupt smooth boundary.

Bt1—6 to 45 inches; dark red (2.5YR 3/6) silty clay; moderate medium subangular blocky structure; friable, moderately sticky, moderately plastic; common fine and few medium roots; many faint clay films on vertical and horizontal faces of peds; few black (7.5YR 2.5/1) iron-manganese concretions; very strongly acid; gradual smooth boundary.

Bt2—45 to 62 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; firm, moderately sticky, slightly plastic; few fine and medium roots; many distinct clay films on vertical and horizontal faces of peds; common black (7.5YR 2.5/1) iron-manganese concretions; very strongly acid.

Range in Characteristics

Solum thickness and depth to bedrock are more than 60 inches. The content of gravel and cobbles ranges from 0 to 10 percent in the A, Ap, and Bt horizons. Reaction ranges from very strongly acid to neutral.

The A horizon, if it occurs, has hue of 2.5YR or 5YR, value of 2 or 3, and chroma of 2 to 4. It is loam, silt loam, silty clay loam, silty clay, or clay.

The Ap horizon has hue of 2.5YR or 5YR, value of 2 or 3, and chroma of 2 to 4. It is loam, silt loam, silty clay loam, silty clay, or clay.

The Bt horizon has hue of 10R or 2.5YR, value of 3, and chroma of 4 to 6. It is silty clay loam, silty clay, or clay.

Berks Series

Physiographic province: Valley and Ridge
Landform: Mountains and hills
Parent material: Residuum weathered from shale interbedded with siltstone and sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 15 to 70 percent

Associated Soils

- Lily soils, which formed in residuum derived from sandstone
- Shelocta soils, which formed in colluvium and are deeper to bedrock than the Berks soils
- Weikert soils, which are shallower to bedrock than the Berks soils

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Berks very channery silt loam in an area of Weikert-Berks complex, 35 to 70 percent slopes; about 0.4 mile south of the junction of Highways VA-16 and VA-648, in Hungry Mother State Park; Chatham Hill, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 52 minutes 48 seconds N. and long. 81 degrees 31 minutes 35 seconds W.

Oi—0 to 2 inches; slightly decomposed plant material.
A—2 to 5 inches; brown (10YR 5/3) very channery silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many very fine and coarse roots; 50 percent angular shale channers; very strongly acid; clear smooth boundary.
Bw1—5 to 15 inches; yellowish brown (10YR 5/6) channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and medium roots; common faint silt coats on rock fragments and on vertical and horizontal faces of peds; 30 percent angular shale channers; very strongly acid; gradual wavy boundary.
Bw2—15 to 26 inches; brownish yellow (10YR 6/8) very channery silt loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; common faint silt coats on rock fragments and on vertical and horizontal faces of peds; 55 percent angular shale channers; very strongly acid; clear smooth boundary.
C—26 to 28 inches; strong brown (7.5YR 5/8) extremely channery silt loam; massive; friable, slightly sticky, slightly plastic; few very fine roots; 80 percent angular shale channers; very strongly acid; abrupt wavy boundary.
R—28 inches; shale bedrock.

Range in Characteristics

The solum ranges from 12 to 40 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. The content of channers, by volume, ranges from 35 to 50 percent in the A and Ap horizons, from 15 to 75 percent in the Bw horizon, and from 35 to 90 percent in the C horizon. In unlimed areas, reaction ranges from extremely acid to moderately acid.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Texture in the fine-earth fraction is silt loam.

The Bw horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. Texture in the fine-earth fraction is loam, silt loam, or silty clay loam.

The C horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 8. Texture in the fine-earth fraction is loam or silt loam.

Botetourt Series

Physiographic province: Valley and Ridge
Landform: Stream terraces
Parent material: Alluvium derived from limestone, shale, quartzite, and sandstone
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 15 percent

Associated Soils

- Derroc, Ingledove, and Wolfgap soils, which are well drained

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Ultic Hapludalfs

Typical Pedon

Botetourt loam, 2 to 7 percent slopes, rarely flooded; about 0.1 mile southeast of the junction of Highways VA-42 and VA-621, about 0.24 mile east of Goodwill Church, 0.5 mile south-southwest of Young Chapel; Nebo, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 57 minutes 38 seconds N. and long. 81 degrees 28 minutes 15 seconds W.

Ap—0 to 7 inches; dark yellowish brown (10YR 4/4) loam; moderate medium granular structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; slightly acid; abrupt smooth boundary.

BA—7 to 18 inches; yellowish brown (10YR 5/8) loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; slightly acid; clear smooth boundary.

Bt1—18 to 37 inches; yellowish brown (10YR 5/8) clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine roots; common faint clay films on vertical and horizontal faces of peds; common medium prominent gray (10YR 6/1) iron depletions throughout; moderately acid; clear smooth boundary.

Bt2—37 to 48 inches; yellowish brown (10YR 5/8) gravelly loam; moderate medium subangular blocky structure; friable, slightly sticky, nonplastic; few fine roots; few faint clay films on vertical and horizontal faces of peds and clay bridges between sand grains; common medium prominent light gray (10YR 7/1) iron depletions throughout; 20 percent rounded sandstone gravel; strongly acid; clear smooth boundary.

C—48 to 62 inches; yellowish brown (10YR 5/6) gravelly loam; massive; friable, nonsticky, nonplastic; many medium prominent light gray (10YR 7/1) iron depletions throughout; 25 percent rounded sandstone gravel; strongly acid.

Range in Characteristics

Solum thickness ranges from 40 to 60 inches or more. Depth to bedrock is more than 60 inches. The content of rounded gravel and cobbles ranges from 0 to 15 percent in the Ap horizon, from 0 to 35 percent in the BA, Bt, and BC horizons, and from 5 to 50 percent in the C horizon. In unlimed areas, reaction ranges from strongly acid to slightly acid.

The Ap horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. It is loam.

The BA horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 8. Texture in the fine-earth fraction is loam, silt loam, sandy clay loam, or clay loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. Texture in the fine-earth fraction is loam, sandy clay loam, or clay loam.

The BC horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 8. Texture in the fine-earth fraction is loam, sandy clay loam, or clay loam.

The C horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 1 to 8. Texture in the fine-earth fraction is sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam.

Brushy Series

Physiographic province: Valley and Ridge
Landform: Mountains
Parent material: Residuum weathered from chert or cherty limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 25 to 65 percent

Associated Soils

- Berks, Calvin, and Lily soils, which do not contain chert
- Poynor soils, which are very deep

Taxonomic Classification

Loamy-skeletal, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Brushy extremely gravelly loam, 25 to 65 percent slopes; on Walker Mountain about 1.75 miles northeast of the junction of Highways VA-617 and VA-659, about 1.25 miles west-northwest of Grove Church, 0.2 mile north of old Shannon Gap Road; Chatham Hill, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 52 minutes 45 seconds N. and long. 81 degrees 35 minutes 36 seconds W.

Oe—0 to 2 inches; moderately decomposed plant material.
A—2 to 7 inches; dark yellowish brown (10YR 4/4) extremely gravelly loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine and fine roots; 75 percent angular chert gravel; extremely acid; clear smooth boundary.
E—7 to 13 inches; pale brown (10YR 6/3) very gravelly loam; weak fine granular structure; friable, nonsticky, nonplastic; common very fine and fine roots; 55 percent angular chert gravel; very strongly acid; abrupt wavy boundary.
Bt1—13 to 27 inches; yellowish brown (10YR 5/4) very gravelly clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; common distinct clay films on vertical and horizontal faces of peds; 45 percent angular chert gravel; very strongly acid; clear wavy boundary.
Bt2—27 to 34 inches; brown (7.5YR 5/4) very gravelly clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common distinct clay films on vertical and horizontal faces of peds; 40 percent angular chert gravel; very strongly acid; abrupt smooth boundary.
R—34 inches; chert bedrock.

Range in Characteristics

Solum thickness and depth to bedrock range from 20 to 40 inches. The content of chert gravel, cobbles, and stones ranges from 25 to 80 percent in individual horizons

and averages 35 percent or more between depths of 10 and 40 inches. In unlimed areas, reaction ranges from extremely acid to moderately acid.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. Texture in the fine-earth fraction is loam.

The Ap horizon, if it occurs, has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. Texture in the fine-earth fraction is loam, silt loam, or fine sandy loam.

The E horizon has hue of 10YR, value of 6, and chroma of 3 or 4. Texture in the fine-earth fraction is loam, silt loam, or fine sandy loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. Texture in the fine-earth fraction is loam, clay loam, or sandy clay loam.

Calvin Series

Physiographic province: Valley and Ridge
Landform: Mountains
Parent material: Residuum weathered from red, noncalcareous shale interbedded with siltstone and sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Moderately deep
Slope range: 25 to 65 percent

Associated Soils

- Berks, Brushy, Dekalb, Drypond, Lily, and Weikert soils, which are not as red as the Calvin soils

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Calvin channery silt loam, 25 to 65 percent slopes; about 6.0 miles northwest of Marion, Virginia, about 0.06 mile east of Highway VA-16, about 1.5 miles north of the the junction of Highways VA-16 and VA-348, in woodland; Chatham Hill, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 54 minutes 18 seconds N. and long. 81 degrees 32 minutes 16 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.

A—1 to 5 inches; dark reddish brown (5YR 3/3) channery silt loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine and fine roots; many very fine interstitial pores; 20 percent channers; very strongly acid; abrupt wavy boundary.

BA—5 to 10 inches; reddish brown (5YR 4/3) channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, nonplastic; common fine and medium and few coarse roots; many very fine interstitial pores; 30 percent channers; very strongly acid; clear smooth boundary.

Bw—10 to 22 inches; reddish brown (5YR 4/3) very channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and medium roots; 45 percent channers; very strongly acid; clear smooth boundary.

C—22 to 28 inches; reddish brown (5YR 4/3) extremely channery silt loam; massive; friable, nonsticky, nonplastic; few very fine roots; many very fine interstitial pores; 70 percent channers; very strongly acid; clear smooth boundary.

R—28 inches; shale bedrock.

Range in Characteristics

The solum ranges from 20 to 35 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 15 to 25 percent in the A horizon, from 25 to 55 percent in the BA and Bw horizons, and from 40 to 80 percent in the C horizon. In unlimed areas, reaction ranges from very strongly acid to moderately acid.

The A horizon has hue of 7.5YR or 5YR, value of 2 to 5, and chroma of 2 to 4. Texture in the fine-earth fraction is silt loam.

The BA horizon, if it occurs, has hue of 10R to 5YR, value of 4 or 5, and chroma of 2 to 8. Texture in the fine-earth fraction is silt loam or loam.

The Bw horizon has hue of 10R to 5YR, value of 4 or 5, and chroma of 2 to 8. Texture in the fine-earth fraction is silt loam or loam.

The C horizon has hue of 10R to 5YR, value of 3 to 5, and chroma of 2 to 4. Texture in the fine-earth fraction is silt loam or loam.

Carbo Series

Physiographic province: Valley and Ridge
Landform: Hills; some areas have karst topography
Parent material: Residuum weathered from limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately low
Depth class: Moderately deep
Slope range: 7 to 65 percent

Associated Soils

- Frederick and Westmoreland soils, which are deeper to bedrock than the Carbo soils
- Newbern soils, which are shallower to bedrock than the Carbo soils
- Wurno soils, which have less clay in the subsoil that the Carbo soils

Taxonomic Classification

Very fine, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Carbo silty clay loam, 7 to 15 percent slopes; 0.5 mile south of Highway VA-610, about 1.0 mile southwest of Big Cave, about 1.25 miles northeast of Cave Spring; Chatham Hill, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 54 minutes 17 seconds N. and long. 81 degrees 35 minutes 37 seconds W.

Ap—0 to 5 inches; brown (10YR 4/3) silty clay loam; moderate medium granular structure; friable, slightly sticky, slightly plastic; many very fine, fine, and medium roots; neutral; clear smooth boundary.

Bt1—5 to 16 inches; brown (7.5YR 5/4) clay; moderate medium subangular blocky structure; firm, very sticky, very plastic; few very fine and fine roots; many distinct clay films on vertical and horizontal faces of peds; common black (10YR 2/1) manganese masses; neutral; clear wavy boundary.

Bt2—16 to 24 inches; brown (7.5YR 4/4) clay; moderate medium subangular blocky structure; firm, very sticky, very plastic; many distinct clay films on vertical and horizontal faces of peds; common black (10YR 2/1) manganese masses; neutral; abrupt smooth boundary.

R—24 inches; limestone bedrock.

Range in Characteristics

Solum thickness and depth to bedrock range from 20 to 40 inches. The content of

rock fragments, generally shale, limestone, or quartz, ranges from 0 to 10 percent in the A horizon and from 0 to 15 percent in the Bt and C horizons. The content of manganese nodules ranges from 0 to 10 percent throughout the solum. In some pedons a few secondary carbonate concretions are in the lower part of the B and C horizons. In unlimed areas, reaction ranges from very strongly acid to neutral in the Ap horizon and from moderately acid to mildly alkaline in the Bt and C horizons.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. It is silty clay loam or, in eroded areas, silty clay or clay.

The Bt horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. Hue of 5YR, however, is restricted to the lower part of the horizon. In some pedons the horizon is multicolored. The horizon is clay.

The C horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 8. In some pedons it is multicolored. It is clay or silty clay.

Chiswell Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Residuum weathered from shale, siltstone, and fine-grained sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Shallow
Slope range: 7 to 65 percent

Associated Soils

- Austinville, Groseclose, Litz, Shelocta, Shottower, and Tumbling soils, which are deeper to bedrock than the Chiswell soils

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic, shallow Typic Dystrudepts

Typical Pedon

Chiswell channery silt loam in an area of Chiswell-Litz-Groseclose complex, 7 to 15 percent slopes (fig. 13); about 0.7 mile southwest of the junction of Highways VA-612 and VA-678, about 2 miles southeast of Blue Spring Church; Cedar Springs, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 47 minutes 21 seconds N. and long. 81 degrees 16 minutes 51 seconds W.

A—0 to 4 inches; dark reddish brown (5YR 3/4) channery silt loam; weak very fine and fine granular structure; friable, nonsticky, nonplastic; many fine roots; 20 percent channers; moderately acid; abrupt smooth boundary.

AB—4 to 8 inches; dark reddish brown (5YR 3/4) channery silt loam; weak very fine granular structure; friable, nonsticky, nonplastic; common fine roots; 25 percent channers; moderately acid; abrupt wavy boundary.

Bw1—8 to 12 inches; reddish brown (5YR 4/4) very channery silt loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; few fine roots; 40 percent channers; strongly acid; clear wavy boundary.

Bw2—12 to 17 inches; reddish brown (5YR 4/4) extremely channery silt loam; weak very fine subangular blocky structure; friable, nonsticky, nonplastic; 75 percent channers; strongly acid; clear smooth boundary.

Cr—17 inches; weathered shale bedrock.

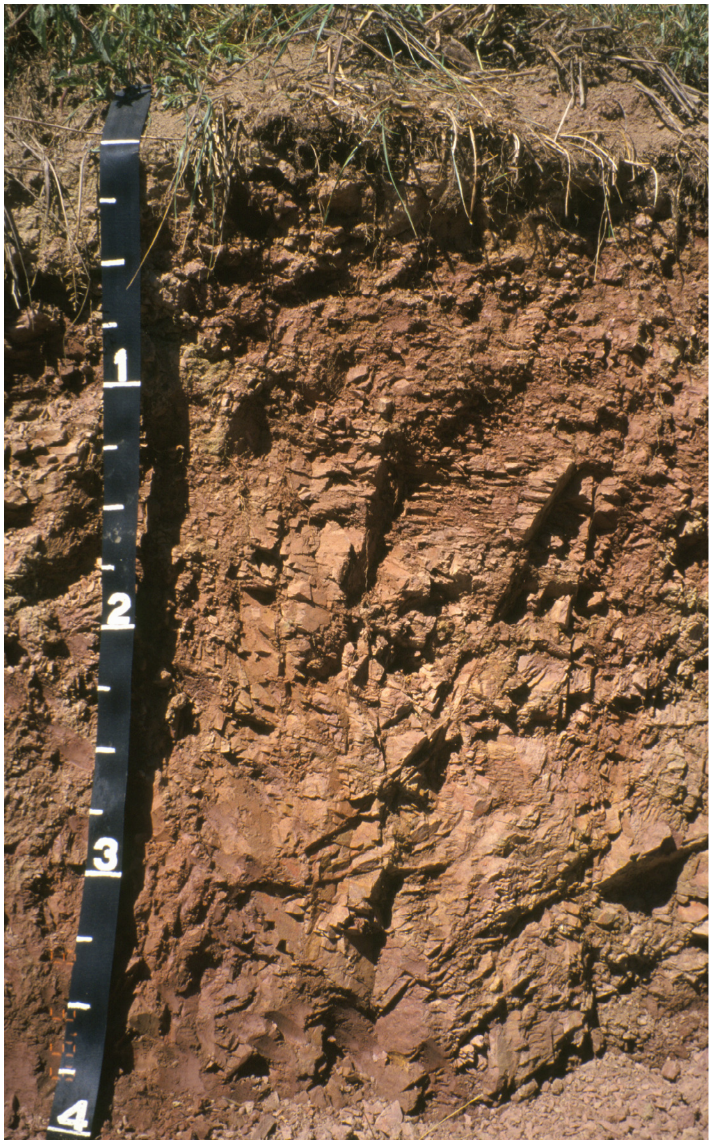

Figure 13.—Profile of a Chiswell soil. Weathered shale is at a depth of about 17 inches. Depth is marked in feet.

Range in Characteristics

The solum ranges from 5 to 19 inches in thickness. Depth to soft bedrock ranges from 10 to 20 inches. The content of channers ranges from 15 to 35 percent in the A and Ap horizons, from 35 to 80 percent in the Bw horizon, and from 45 to 90 percent in the C horizon. In unlimed areas, reaction ranges from extremely acid to moderately acid.

The A horizon has hue of 5YR to 10YR, value of 3 or 4, and chroma of 2 to 5. Texture in the fine-earth fraction is loam or silt loam.

The Ap horizon, if it occurs, has hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 5. Texture in the fine-earth fraction is loam or silt loam.

The AB horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 6. Texture in the fine-earth fraction is loam or silt loam.

The Bw horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 6. Texture in the fine-earth fraction is loam, silt loam, clay loam, or silty clay loam.

The C horizon, if it occurs, has hue of 5YR to 5Y, value of 4 to 6, and chroma of 3 to 8. Texture in the fine-earth fraction is loam, silt loam, clay loam, or silty clay loam.

The Cr horizon is weathered, interbedded shale, siltstone, and sandstone.

Dekalb Series

Physiographic province: Valley and Ridge
Landform: Mountains
Parent material: Residuum weathered from sandstone and quartzite
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Moderately deep
Slope range: 15 to 80 percent

Associated Soils

- Brushy soils, which have more chert fragments than the Dekalb soil
- Calvin soils, which have a red subsoil
- Drypond soils, which are shallower to bedrock than the Dekalb soils
- Laidig soils, which have a fragipan
- Lily soils, which have fewer rock fragments than the Dekalb soils

Taxonomic Classification

Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts

Typical Pedon

Dekalb channery sandy loam, 25 to 80 percent slopes, extremely stony; about 2.5 miles southeast of Thomas Bridge, Virginia, on Barton Mountain, about 0.6 mile west of the junction of Highways VA-650 and VA-670, about 1.6 miles east of the junction of Highways VA-650 and VA-720, in woodland; Marion, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 45 minutes 20 seconds N. and long. 81 degrees 31 minutes 7 seconds W.

Oi—0 to 2 inches; slightly decomposed plant material.

A—2 to 5 inches; very dark grayish brown (10YR 3/2) channery sandy loam; weak fine granular structure; friable, slightly sticky, nonplastic; many very fine and fine roots; 5 percent flagstones and 20 percent channers; strongly acid; abrupt wavy boundary.

Bw—5 to 24 inches; yellowish brown (10YR 5/6) very channery sandy loam; weak very fine and fine subangular blocky structure; friable, slightly sticky, nonplastic; common very fine and fine roots; 10 percent flagstones and 40 percent channers; strongly acid; gradual wavy boundary.

C—24 to 31 inches; yellowish brown (10YR 5/6) extremely channery sandy loam; massive; friable, slightly sticky, nonplastic; few very fine roots; 15 percent flagstones and 60 percent channers; strongly acid; clear wavy boundary.

R—31 inches; sandstone bedrock.

Range in Characteristics

Solum thickness and depth to bedrock range from 20 to 40 inches. The content of channers and flagstones ranges from 15 to 35 percent in the A horizon, from 15 to 60 percent in the B horizon, and from 50 to 90 percent in the C horizon. In unlimed areas, reaction is extremely acid to strongly acid.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. Texture in the fine-earth fraction is sandy loam.

The Bw horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. Texture in the fine-earth fraction is sandy loam or loam.

The C horizon has hue of 7.5YR or 10YR, value of 5, and chroma of 4 to 6. Texture in the fine-earth fraction is sandy loam or loamy sand.

Derroc Series

Physiographic province: Valley and Ridge
Landform: Flood plains
Parent material: Alluvium derived from sandstone, limestone, shale, and quartzite
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Very deep
Slope range: 0 to 5 percent
Note: In some areas Derroc soils have been mapped in association with soils of mixed mineralogy on terraces or flood plains.

Associated Soils

- Botetourt, Ingledove, Wheeling, and Wolfgap soils, which have fewer rock fragments in the subsoil than the Derroc soils

Taxonomic Classification

Loamy-skeletal, siliceous, active, mesic Dystric Fluventic Eutrudepts

Typical Pedon

Derroc cobbly sandy loam, 0 to 5 percent slopes, occasionally flooded; about 0.6 mile southwest of Atkins, 0.09 mile south-southeast of the junction of Highways I-81 and VA-622, along Nicks Creek; Atkins, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 51 minutes 41 seconds N. and long. 81 degrees 25 minutes 56 seconds W.

Ap—0 to 8 inches; dark yellowish brown (10YR 3/6) cobbly sandy loam; weak fine granular structure; very friable, slightly sticky, nonplastic; many fine and medium roots; 10 percent gravel and 20 percent cobbles; slightly acid; clear wavy boundary.

Bw1—8 to 15 inches; yellowish brown (10YR 5/6) very cobbly sandy loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, nonplastic; common fine and medium roots; 20 percent gravel and 25 percent cobbles; moderately acid; clear smooth boundary.

Bw2—15 to 35 inches; yellowish brown (10YR 5/6) very cobbly sandy loam; weak fine and medium subangular blocky structure; friable, slightly sticky, nonplastic; few medium roots; 20 percent gravel and 35 percent cobbles; moderately acid; clear smooth boundary.

C—35 to 62 inches; yellowish brown (10YR 5/6) extremely cobbly loamy sand; single grain; loose; common fine and medium roots; 20 percent gravel and 50 percent cobbles; moderately acid.

Range in Characteristics

The solum ranges from 20 to 40 inches in thickness. Depth to bedrock is more than 60 inches. The content of rock fragments ranges from 15 to 35 percent in the A and Ap horizons and from 30 to 80 percent in the Bw and C horizons. In unlimed areas, reaction ranges from moderately acid to neutral.

The A horizon, if it occurs, has hue of 7.5YR or 10YR and value and chroma of 2 or 3. Texture in the fine-earth fraction is sandy loam, loam, or silt loam.

The Ap horizon has hue of 7.5YR or 10YR, value of 2 to 5, and chroma of 2 to 6. Texture in the fine-earth fraction is sandy loam.

The Bw horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 6. Texture in the fine-earth fraction is sandy loam or loam.

The C horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. Texture in the fine-earth fraction is loamy sand or sandy loam.

Drypond Series

Physiographic province: Valley and Ridge
Landform: Mountains
Parent material: Residuum weathered from sandstone and quartzite
Drainage class: Excessively drained
Slowest saturated hydraulic conductivity: High
Depth class: Shallow
Slope range: 15 to 80 percent

Associated Soils

- Calvin, Dekalb, and Lily soils, which are deeper to bedrock than the Drypond soils

Taxonomic Classification

Loamy-skeletal, siliceous, active, mesic Lithic Dystrudepts

Typical Pedon

Drypond very gravelly sandy loam in an area of Drypond-Rock outcrop complex, 35 to 80 percent slopes, extremely stony; about 1.5 miles northwest of the junction of Highways VA-16 and VA-348, about 0.5 mile north of Stone Lick Hollow, about 2.0 miles southeast of Big Cave; Chatham Hill, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 53 minutes 20 seconds N. and long. 81 degrees 33 minutes 5 seconds W.

Oi—0 to 2 inches; slightly decomposed plant material.

A—2 to 5 inches; brown (10YR 4/3) very gravelly sandy loam; weak fine granular structure; friable, slightly sticky, nonplastic; many very fine and fine roots; 40 percent sandstone gravel; extremely acid; abrupt wavy boundary.

Bw—5 to 13 inches; yellowish brown (10YR 5/8) very gravelly sandy loam; weak fine subangular blocky structure; friable, slightly sticky, nonplastic; common very fine and fine roots; 45 percent sandstone gravel; very strongly acid; gradual wavy boundary.

C—13 to 18 inches; yellowish brown (10YR 5/8) extremely gravelly sandy loam; massive; friable, slightly sticky, nonplastic; few very fine roots; 70 percent sandstone gravel; very strongly acid; clear wavy boundary.

R—18 inches; quartzite bedrock.

Range in Characteristics

The solum ranges from 10 to 18 inches in thickness. Depth to bedrock ranges from 10 to 20 inches. The content of gravel and channers ranges from 35 to 60 percent in the A horizon, from 25 to 80 percent in the Bw horizon, and from 45 to 90 percent in the C horizon. In unlimed areas, reaction is extremely acid or very strongly acid.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 to 4. Texture in the fine-earth fraction is sandy loam or loam.

The Bw horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. Texture in the fine-earth fraction is sandy loam, loam, or sandy clay loam.

The C horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 8. Texture in the fine-earth fraction is sandy loam or loam.

Frederick Series

Physiographic province: Valley and Ridge
Landform: Hills
Parent material: Residuum weathered from limestone and/or cherty limestone interbedded with shale, siltstone, and sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 60 percent

Associated Soils

- Austinville soils, which are redder throughout than the Frederick soils
- Carbo and Wurno soils, which are shallower to bedrock than the Frederick soils
- Marbie soils, which have a fragipan
- Shottower soils, which have rounded rock fragments and formed in alluvium
- Timberville soils, which are subject to flooding
- Wyrick soils, which have less clay in the subsoil than the Frederick soils

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Paleudults

Typical Pedon

Frederick silt loam, 7 to 15 percent slopes (fig. 14); about 1.0 mile west of Atkins, Virginia, about 0.5 mile north-northeast of the junction of Highways VA-622 and US-11, about 1.5 miles northeast of the junction of Highways VA-689 and US-11, in a hay field; Atkins, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 52 minutes 10 seconds N. and long. 81 degrees 26 minutes 51 seconds W.

Ap—0 to 8 inches; brown (7.5YR 4/4) silt loam; moderate medium granular structure; friable, slightly sticky, slightly plastic; many fine roots; 3 percent angular chert gravel; slightly acid; abrupt smooth boundary.

Bt1—8 to 18 inches; red (2.5YR 4/6) silty clay; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; common fine roots; many distinct clay films on vertical and horizontal faces of peds; 5 percent angular chert gravel; strongly acid; diffuse smooth boundary.

Bt2—18 to 35 inches; red (2.5YR 4/6) clay; common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; few fine roots; many distinct clay films on vertical and horizontal faces of peds; 5 percent angular chert gravel; strongly acid; clear wavy boundary.

Bt3—35 to 51 inches; red (2.5YR 4/6) clay; common medium prominent reddish yellow (7.5YR 8/6) and common medium distinct strong brown (7.5YR 4/6) mottles; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; many distinct clay films on vertical and horizontal faces of peds; 5 percent angular chert gravel; strongly acid; gradual wavy boundary.

Bt4—51 to 72 inches; red (2.5YR 4/6) clay; common medium distinct reddish yellow (7.5YR 8/6) mottles; moderate medium subangular blocky structure; firm,

Figure 14.—Profile of a Frederick soil. Accumulated clay extends from a depth of about 8 to more than 60 inches. Typically, chert fragments are scattered throughout the soil profile but make up less than 35 percent of individual soil horizons. Depth is marked in feet.

moderately sticky, moderately plastic; many distinct clay films on vertical and horizontal faces of peds; 10 percent angular chert gravel; strongly acid.

Range in Characteristics

The solum is more than 60 inches thick. Depth to bedrock is more than 72 inches. The content of rock fragments, mostly gravel and some cobbles, ranges from 0 to 35 percent, by volume, in the A, Ap, E, and Bt horizons. In unlimed areas, reaction ranges from very strongly acid to moderately acid.

The A horizon, if it occurs, has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. Texture in the fine-earth fraction is loam or silt loam.

The Ap horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 to 8. Texture in the fine-earth fraction is silt loam.

The E horizon, if it occurs, has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 3 to 8. Texture in the fine-earth fraction is loam or silt loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 4 to 8. Texture in the fine-earth fraction is silty clay loam, silty clay, or clay.

Greenlee Series

Physiographic province: Blue Ridge
Landform: Base of slopes of mountains near Mount Rogers
Parent material: Colluvium derived from rhyolite, quartz, and minor amounts of gneiss and granite
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Very deep
Slope range: 25 to 65 percent

Associated Soils

- Konnarock soils, which are shallower to bedrock than the Greenlee soils
- Tate soils, which have fewer rock fragments than the Greenlee soils

Taxonomic Classification

Loamy-skeletal, mixed, semiactive, mesic Typic Dystrudepts

Typical Pedon

Greenlee very cobbly loam, 25 to 65 percent slopes, very stony; about 1.0 mile southeast of the junction of Highways VA-600 and VA-603, about 0.5 mile southeast of Laurel Cemetery, about 0.6 mile southeast of the junction of Highways VA-600 and VA-760, about 0.9 mile south of Laurel Creek; Whitetop Mountain, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 39 minutes 47 seconds N. and long. 81 degrees 35 minutes 55 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.

Oe—1 to 3 inches; moderately decomposed plant material.

A—3 to 9 inches; dark yellowish brown (10YR 4/4) very cobbly loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 20 percent cobbles and 20 percent gravel; strongly acid; clear smooth boundary.

BA—9 to 20 inches; yellowish brown (10YR 5/4) very cobbly loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine, medium, and coarse roots; 15 percent gravel and 25 percent cobbles; strongly acid; clear smooth boundary.

Bw—20 to 50 inches; yellowish brown (10YR 5/6) very cobbly loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine, medium, and coarse roots; 2 percent stones, 15 percent gravel, and 28 percent cobbles; strongly acid; clear smooth boundary.

C—50 to 65 inches; yellowish brown (10YR 5/6) very cobbly loam; massive; friable, slightly sticky, slightly plastic; 5 percent stones, 5 percent boulders, 10 percent gravel, and 35 percent cobbles; strongly acid.

Range in Characteristics

The solum ranges from 20 to 60 inches or more in thickness. Depth to bedrock is more than 60 inches. The content of rock fragments ranges from 35 to 60 percent in

the A, BA, and Bw horizons and from 35 to 80 percent in the BC and C horizons. In unlimed areas, reaction is extremely acid to moderately acid.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. Texture in the fine-earth fraction is loam.

The BA horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. Texture in the fine-earth fraction is loam or sandy loam.

The Bw horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. Texture in the fine-earth fraction is loam or sandy loam.

The BC horizon, if it occurs, has hue of 7.5YR or 10YR and value and chroma of 4 to 6. Texture in the fine-earth fraction is loam, sandy loam, or loamy sand.

The C horizon has hue of 7.5YR of 10YR and value and chroma of 4 to 6. Texture in the fine-earth fraction is loam, sandy loam, or loamy sand.

Groseclose Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Residuum derived from shale, siltstone, limestone, and fine-grained sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately low
Depth class: Very deep
Slope range: 7 to 65 percent

Associated Soils

- Austinville soils, which are redder throughout than the Groseclose soils
- Chiswell and Litz soils, which are shallower to bedrock than the Groseclose soils
- Shelocta soils, which have less clay in the subsoil than the Groseclose soils
- Shottower soils, which have rounded rock fragments and formed in alluvium
- Tumbling soils, which have subrounded rock fragments and formed in colluvium

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Hapludults

Typical Pedon

Groseclose silt loam in an area of Chiswell-Litz-Groseclose complex, 7 to 15 percent slopes (fig. 15); about 2.5 miles south-southeast of Cedar Springs, 0.6 mile west of the junction of Highways VA-612 and VA-678; Cedar Springs, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 47 minutes 39 seconds N. and long. 81 degrees 15 minutes 58 seconds W.

Ap—0 to 9 inches; yellowish brown (10YR 5/8) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; moderately acid; abrupt smooth boundary.

Bt1—9 to 18 inches; strong brown (7.5YR 5/6) clay; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; common fine and medium roots; many prominent clay films on vertical and horizontal faces of peds; strongly acid; clear smooth boundary.

Bt2—18 to 32 inches; strong brown (7.5YR 5/8) clay; weak medium subangular blocky structure; firm, moderately sticky, moderately plastic; few fine roots; common prominent clay films on vertical and horizontal faces of peds; 5 percent channers; strongly acid; clear wavy boundary.

BC—32 to 54 inches; strong brown (7.5YR 5/8) silty clay; weak medium subangular blocky structure; firm, moderately sticky, moderately plastic; few fine roots;

Figure 15.—Profile of a Groseclose soil. Accumulated clay extends from a depth of about 9 to 54 inches. Depth is marked in feet.

common prominent clay films on vertical and horizontal faces of peds; 10 percent channers; strongly acid; clear wavy boundary.

C—54 to 62 inches; strong brown (7.5YR 5/8) silty clay loam; massive; friable, slightly sticky, slightly plastic; few manganese coatings; 10 percent channers; strongly acid.

Range in Characteristics

The solum ranges from 30 to 60 inches in thickness. Depth to bedrock is more than 60 inches. The content of channers ranges from 0 to 15 percent in the A, Ap, Bt, and C horizons. In unlimed areas, reaction ranges from extremely acid to strongly acid.

The A horizon, if it occurs, has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. It is fine sandy loam, loam, or silt loam.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 8. It is silt loam.

The Bt horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. It is clay loam, silty clay loam, silty clay, or clay.

The BC horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. It is clay loam, silty clay loam, silty clay, or clay.

The C horizon has hue of 2.5YR to 10YR, value of 4 to 8, and chroma of 3 to 8. It is sandy clay loam, clay loam, silty clay loam, or clay.

Ingledove Series

Physiographic province: Valley and Ridge
Landform: Stream terraces along the north fork of the Holston River
Parent material: Alluvium derived from limestone, sandstone, siltstone, quartzite, and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 7 percent

Associated Soils

- Botetourt soils, which are moderately well drained
- Derroc soils, which have more rock fragments throughout than the Ingledove soils
- Wolfgap soils, which are on flood plains

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Ultic Hapludalfs

Typical Pedon

Ingledove loam, 2 to 7 percent slopes, rarely flooded; about 2.2 miles east-northeast of Broadford, 0.4 mile west-northwest of the junction of Highways VA-42 and VA-630; Broadford, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 55 minutes 56 seconds N. and long. 81 degrees 38 minutes 2 seconds W.

Ap—0 to 9 inches; dark yellowish brown (10YR 3/4) loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine and medium roots; slightly acid; abrupt smooth boundary.

Bt1—9 to 20 inches; strong brown (7.5YR 4/6) clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; many fine and medium roots; many distinct clay films on vertical and horizontal faces of peds; slightly acid; clear smooth boundary.

Bt2—20 to 42 inches; strong brown (7.5YR 5/6) clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; many distinct clay films on vertical and horizontal faces of peds; slightly acid; clear smooth boundary.

Bt3—42 to 57 inches; dark yellowish brown (10YR 4/6) clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; common distinct clay films on vertical and horizontal faces of peds; 2 percent cobbles and 3 percent gravel; slightly acid; clear smooth boundary.

C—57 to 62 inches; dark yellowish brown (10YR 4/6) sandy clay loam; massive; friable, slightly sticky, slightly plastic; 2 percent cobbles and 8 percent gravel; slightly acid.

Range in Characteristics

The solum ranges from 30 to 60 inches or more in thickness. Depth to bedrock is more than 60 inches. The content of rounded gravel and cobbles ranges from 0 to 15 percent in the A and Ap horizons and in the upper part of the Bt horizon and from 0 to 60 percent in the lower part of the Bt horizon and in the C horizon. Reaction ranges from very strongly acid to neutral in the A and Ap horizons and in the upper part of the Bt horizon and from moderately acid to neutral in the lower part of the Bt horizon and in the C horizon.

The A horizon, if it occurs, has hue of 5YR to 10YR and value and chroma of 2 or 3. It is sandy loam, fine sandy loam, loam, or silt loam.

The Ap horizon, if it occurs, has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 or 4. It is loam.

The upper part of the Bt horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. It is loam, sandy clay loam, or clay loam.

The lower part of the Bt horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. Texture in the fine-earth fraction is loam, sandy clay loam, or clay loam.

The C horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. Texture in the fine-earth fraction is loamy sand, sandy loam, loam, sandy clay loam, or clay loam.

Konnarock Series

Physiographic province: Blue Ridge
Landform: Mountains near Mount Rogers
Parent material: Residuum weathered from tillite and rhythmite
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Moderately deep
Slope range: 15 to 65 percent

Associated Soils

- Greenlee and Tate soils, which are deeper to bedrock than the Konnarock soils

Taxonomic Classification

Loamy-skeletal, mixed, semiactive, mesic Typic Dystrudepts

Typical Pedon

Konnarock very channery silt loam, 35 to 65 percent slopes; about 0.6 mile east of the junction of Highways VA-600 and VA-603, about 1.0 mile west of Laurel Creek Church; Whitetop Mountain, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 40 minutes 37 seconds N. and long. 81 degrees 36 minutes 11 seconds W.

A—0 to 2 inches; brown (10YR 4/3) and dark reddish brown (5YR 3/3) very channery silt loam; moderate fine granular structure; friable, slightly sticky, slightly plastic; many fine and medium roots; 45 percent channers; very strongly acid; clear smooth boundary.

Bw—2 to 23 inches; reddish brown (5YR 4/3) and brown (10YR 4/3) very channery silt loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine roots; 50 percent channers; very strongly acid; gradual smooth boundary.

C—23 to 27 inches; reddish brown (5YR 4/3) and brown (10YR 4/3) extremely

channery silt loam; massive; friable, slightly sticky, slightly plastic; few fine roots; 90 percent channers; very strongly acid; clear smooth boundary.
R—27 inches; rhythmite bedrock.

Range in Characteristics

The solum ranges from 10 to 30 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. The content of channers ranges from 35 to 65 percent in the A and Ap horizons, from 15 to 75 percent in the Bw horizon, and from 35 to 90 percent in the C horizon. In unlimed areas, reaction ranges from very strongly acid to moderately acid.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. Texture in the fine-earth fraction is silt loam.

The Bw horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. Texture in the fine-earth fraction is loam or silt loam.

The C horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. Texture in the fine-earth fraction is loam or silt loam.

Laidig Series

Physiographic province: Valley and Ridge
Landform: Base of slopes of mountains and areas on mountains
Parent material: Colluvium derived from sandstone, siltstone, and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately low
Depth class: Very deep
Slope range: 2 to 25 percent

Associated Soils

- Berks, Dekalb, Lily, and Weikert soils, which are shallower to bedrock than the Laidig soils and do not have a fragipan

Taxonomic Classification

Fine-loamy, siliceous, active, mesic Typic Fragiudults

Typical Pedon

Laidig sandy loam, 7 to 15 percent slopes; 1 mile northwest of Teas, 1.5 miles south of Pugh Mountain Church, 0.6 mile northeast of the junction of Highways VA-601 and VA-719; Atkins, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 47 minutes 3 seconds N. and long. 81 degrees 27 minutes 48 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.
A—1 to 6 inches; brown (10YR 4/3) sandy loam; weak very fine granular structure; friable, slightly sticky, slightly plastic; many fine, common medium, and few coarse roots; 10 percent sandstone channers; extremely acid; clear wavy boundary.
E—6 to 15 inches; brownish yellow (10YR 6/6) sandy loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; many fine, common medium, and few coarse roots; 5 percent sandstone channers; extremely acid; clear wavy boundary.
Bt—15 to 31 inches; yellowish brown (10YR 5/6) sandy clay loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium and few coarse roots; common distinct clay films on vertical and horizontal faces of peds; 10 percent sandstone channers; very strongly acid; abrupt wavy boundary.
Btx1—31 to 48 inches; yellowish brown (10YR 5/8) sandy loam; moderate coarse prismatic structure parting to weak medium platy; very firm, slightly sticky, slightly

plastic; brittle; few distinct clay films on vertical and horizontal faces of peds; common fine prominent light gray (10YR 7/2) iron depletions; 5 percent sandstone channers; very strongly acid; clear wavy boundary.

Btx2—48 to 63 inches; strong brown (7.5YR 5/8) and yellowish brown (10YR 5/6) sandy loam; weak coarse prismatic structure parting to weak medium platy; very firm, slightly sticky, slightly plastic; brittle; few distinct clay films on vertical and horizontal faces of peds; many medium prominent light gray (10YR 7/2) iron depletions; 5 percent sandstone channers; very strongly acid.

Range in Characteristics

Solum thickness and depth to bedrock are more than 60 inches. Depth to the fragipan ranges from 30 to 50 inches. The content of rock fragments ranges from 5 to 15 percent in the A, Ap, and E horizons, from 5 to 50 percent in the Bt and Btx horizons, and from 20 to 70 percent in the C horizon. Rock fragments can be siltstone and shale but mostly are sandstone. In unlimed areas, reaction ranges from extremely acid to strongly acid.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 to 4. It is sandy loam.

The Ap horizon, if it occurs, has hue of 10YR, value of 2 or 5, and chroma of 2 to 8. It is sandy loam, fine sandy loam, loam, or silt loam.

The E horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 1 to 6. It is sandy loam, fine sandy loam, loam, or silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8. Texture in the fine-earth fraction is loam, sandy clay loam, or clay loam.

The Btx horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 8. Texture in the fine-earth fraction is sandy loam, loam, sandy clay loam, or clay loam.

The C horizon, if it occurs, has hue of 5YR to 10YR, value of 5 or 6, and chroma of 3 to 8. Texture in the fine-earth fraction is sandy loam, loam, sandy clay loam, or clay loam.

Lily Series

Physiographic province: Valley and Ridge
Landform: Mountains
Parent material: Residuum weathered from sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 7 to 65 percent

Associated Soils

- Brushy, Calvin, Dekalb, and Drypond soils, which have more rock fragments throughout than the Lily soils
- Laidig soils, which have a fragipan and are deeper to bedrock than the Lily soils

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Lily sandy loam, 15 to 25 percent slopes, very stony; about 4.6 miles northwest of Atkins, Virginia, on Walker Mountain, about 1.3 miles northwest of the junction of Highways VA-622 and VA-694, about 1.5 miles southwest of the junction of Highways VA-622 and VA-610, in woodland; Nebo, Virginia USGS 7.5 Minute Quadrangle,

NAD27; lat. 36 degrees 54 minutes 49 seconds N. and long. 81 degrees 27 minutes 24 seconds W.

Oi—0 to 2 inches; slightly decomposed plant material.
A—2 to 7 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; many fine, medium, and coarse roots; very strongly acid; clear smooth boundary.
BA—7 to 13 inches; yellowish brown (10YR 5/6) sandy loam; weak fine granular structure; friable, slightly sticky, nonplastic; few fine and medium roots; very strongly acid; clear smooth boundary.
Bt—13 to 24 inches; yellowish brown (10YR 5/8) clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; common distinct clay films on vertical and horizontal faces of peds; very strongly acid; clear wavy boundary.
C—24 to 30 inches; yellowish brown (10YR 5/8) sandy loam; massive; friable, slightly sticky, nonplastic; very strongly acid; abrupt smooth boundary.
R—30 inches; sandstone bedrock.

Range in Characteristics

Solum thickness and depth to bedrock range from 20 to 40 inches. The content of gravel and channers ranges from 0 to 15 percent to a depth of 24 inches and from 0 to 35 percent below a depth of 24 inches. In unlimed areas, reaction ranges from extremely acid to strongly acid.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 5, and chroma of 1 to 3. It is sandy loam.

The Ap horizon, if it occurs, has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 4. It is sandy loam.

The BA horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. Texture in the fine-earth fraction is sandy loam or loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. Texture in the fine-earth fraction is loam, sandy clay loam, or clay loam.

The C horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. Texture in the fine-earth fraction is loamy sand, sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam.

Litz Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Residuum weathered from calcareous shale and limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 7 to 65 percent

Associated Soils

- Chiswell soils, which are shallower to bedrock than the Litz soils
- Austinville, Groseclose, Shelocta, Shottower, and Tumbling soils, which are deeper to bedrock than the Litz soils

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Ruptic-Ultic Dystrudepts

Typical Pedon

Litz silt loam in an area of Chiswell-Litz-Groseclose complex, 15 to 25 percent slopes; about 0.6 mile north of “Horseshoe Bend” and 0.4 mile northeast of the junction of Highways VA-657 and VA-658; Marion, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 46 minutes 57 seconds N. and long. 81 degrees 34 minutes 17 seconds W.

Ap—0 to 5 inches; brown (7.5YR 4/2) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; common fine roots; 10 percent channers; strongly acid; clear smooth boundary.

Bw/Bt—5 to 12 inches; 60 percent yellowish brown (10YR 5/4) channery silt loam (Bw part) and 40 percent strong brown (7.5YR 5/6) silty clay loam (Bt part); weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; many fine pores; few patchy clay films on vertical and horizontal faces of peds in Bt part; 30 percent channers; strongly acid; clear irregular boundary.

C—12 to 24 inches; strong brown (7.5YR 5/6), olive gray (5Y 4/2), and yellowish brown (10YR 5/6) extremely channery silt loam and silty clay loam; massive; few fine roots; 5 percent flagstones and 70 percent channers; strongly acid; diffuse irregular boundary.

Cr—24 to 36 inches; weak red (2.5YR 5/2), olive gray (5Y 4/2), and gray (10YR 5/1) slightly weathered shale bedrock; few lenses of strong brown (7.5YR 5/6) silt loam material; diffuse irregular boundary.

R—36 inches; gray (10YR 5/1), olive gray (5Y 4/2), and weak red (2.5YR 5/2) shale bedrock.

Range in Characteristics

Solum thickness ranges from 10 to 30 inches. Depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 5 to 15 percent in the A and Ap horizons, from 25 to 90 percent in the Bw/Bt horizon, and from 35 to 90 percent in the C horizon. A thin, discontinuous argillic horizon is in some part of each pedon. The content of rock fragments in the Bt part is less than 25 percent in some areas. In unlimed areas, reaction is very strongly acid or strongly acid.

The A horizon, if it occurs, has hue of 5YR to 10YR and value and chroma of 2 to 6. It is loam or silt loam.

The Ap horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 to 6. It is silt loam.

The Bw/Bt horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. Each pedon has, in the fine-earth fraction, a Bw horizon of silt loam and a discontinuous Bt horizon of silty clay loam.

The C horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 1 to 6. Texture in the fine-earth fraction is loam, silt loam, or silty clay loam.

Marbie Series

Physiographic province: Valley and Ridge
Landform: Intermittent drainageways and depressions
Parent material: Colluvium and alluvium derived from limestone, shale, siltstone, and fine-grained sandstone over residuum derived from limestone and shale
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately low
Depth class: Very deep
Slope range: 2 to 25 percent

Associated Soils

- Frederick, Shottower, Timberville, and Wyrick soils, which do not have a fragipan

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Typic Fragiudults

Typical Pedon

Marbie silt loam in an area of Wyrick-Marbie complex, 7 to 15 percent slopes; about 0.6 mile southwest of the junction of Highways VA-619 and VA-42, about 0.25 mile south of the junction of Highways VA-42 and VA-717, about 0.25 mile south of Possum Jaw Creek Sink, 0.9 mile east of the junction of Highways VA-622 and VA-42; Nebo, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 57 minutes 46 seconds N. and long. 81 degrees 26 minutes 2 seconds W.

Ap—0 to 11 inches; brown (10YR 4/3) silt loam; weak very fine and fine granular structure; friable, slightly sticky, slightly plastic; many very fine roots; few fine iron-manganese nodules; 2 percent gravel; moderately acid; abrupt smooth boundary.

Bt—11 to 21 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine roots; common faint clay films on vertical and horizontal faces of peds; few fine iron-manganese nodules; 2 percent gravel; strongly acid; gradual smooth boundary.

Btx1—21 to 42 inches; yellowish brown (10YR 5/6) silty clay loam; moderate coarse platy structure parting to moderate medium subangular blocky; firm, moderately sticky, moderately plastic; brittle; many distinct clay films on vertical and horizontal faces of peds; few fine iron-manganese nodules and many medium prominent light gray (2.5Y 7/2) iron depletions; 5 percent gravel; very strongly acid; clear smooth boundary.

Btx2—42 to 57 inches; yellowish brown (10YR 5/6) silty clay loam; moderate very coarse platy structure parting to moderate medium subangular blocky; firm, moderately sticky, moderately plastic; brittle; many distinct clay films on vertical and horizontal faces of peds; common fine iron-manganese nodules and many medium prominent light gray (10YR 7/2 and 2.5Y 7/2) iron depletions; 5 percent gravel; very strongly acid; gradual smooth boundary.

2Bt—57 to 62 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; many distinct clay films on vertical and horizontal faces of peds; common fine iron-manganese nodules and common medium prominent light gray (10YR 7/2) and (2.5Y 7/2) iron depletions; 10 percent gravel; very strongly acid.

Range in Characteristics

The solum ranges from 40 to 72 inches or more in thickness. Depth to the Btx horizon ranges from 18 to 36 inches. Depth to bedrock is more than 60 inches. The content of gravel ranges from 0 to 15 percent in the A, Ap, and Bt horizons, from 0 to 35 percent in the Btx horizon, and from 0 to 25 percent in the 2Bt and 2C horizons. In unlimed areas, reaction ranges from extremely acid to strongly acid.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. It is silt loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8. It is loam, silt loam, clay loam, or silty clay loam.

The Btx horizon has hue of 7.5YR to 2.5Y, value of 4 to 8, and chroma of 2 to 8. Texture in the fine-earth fraction is loam, silt loam, clay loam, or silty clay loam.

The 2Bt horizon has hue of 2.5YR to 10YR, value of 4 to 7, and chroma of 2 to 6. Texture in the fine-earth fraction is clay loam, silty clay loam, silty clay, or clay.

The 2C horizon, if it occurs, has hue of 2.5YR to 2.5Y, value of 4 to 7, and chroma

of 2 to 6. Texture in the fine-earth fraction is loam, silt loam, clay loam, silty clay loam, silty clay, or clay.

Maurertown Series

Physiographic province: Valley and Ridge
Landform: Depressions on low stream terraces
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Low
Depth class: Very deep
Slope range: 0 to 2 percent

Associated Soils

- Melvin soils, which have less clay in the subsoil than the Maurertown soils
- Sindion, Speedwell, and Wheeling soils, which have less clay in the subsoil than the Maurertown soils and are better drained

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Endoaqualfs

Typical Pedon

Maurertown silt loam, 0 to 2 percent slopes, occasionally flooded; about 1.5 miles north of Marion, Virginia, 0.3 mile northeast of the junction of Highways VA-617 and VA-665, about 1.0 mile northeast of Greenwood Church, 0.5 mile south-southeast of Hungry Mother Lake, in a hayfield; Marion, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 51 minutes 40 seconds N. and long. 81 degrees 31 minutes 39 seconds W.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; moderate fine granular structure; friable, slightly sticky, slightly plastic; many fine and very fine roots; few very fine tubular pores; neutral; clear smooth boundary.

BAg—6 to 18 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate fine subangular blocky structure; firm, slightly sticky, slightly plastic; common very fine and fine roots; few very fine tubular pores; common medium prominent irregular yellowish brown (10YR 5/6) masses of oxidized iron on surfaces along root channels; neutral; gradual smooth boundary.

Btg—18 to 41 inches; dark gray (10YR 4/1) silty clay; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; few very fine and fine roots; few fine tubular pores; common distinct continuous clay films on vertical and horizontal faces of peds; common medium prominent irregular yellowish brown (10YR 5/8) masses of oxidized iron on surfaces along root channels; neutral; clear smooth boundary.

Cg1—41 to 48 inches; very dark gray (10YR 3/1) silty clay loam; massive; friable, slightly sticky, slightly plastic; few very fine tubular pores; many medium prominent irregular yellowish brown (10YR 5/8) and yellow (10YR 7/8) masses of oxidized iron throughout and many medium distinct irregular light gray (10YR 7/1) iron depletions throughout; 10 percent sandstone gravel; neutral; gradual smooth boundary.

Cg2—48 to 62 inches; gray (N 5/0) gravelly silty clay loam; massive; friable, slightly sticky, slightly plastic; few fine roots; few very fine tubular pores; common medium prominent irregular brownish yellow (10YR 6/8) masses of oxidized iron throughout and common medium distinct irregular light gray (10YR 7/1) iron depletions throughout; 15 percent sandstone gravel; neutral.

Range in Characteristics

The solum ranges from 40 to 60 inches or more in thickness. Depth to bedrock is more than 60 inches. The content of rock fragments ranges from 0 to 15 percent throughout the profile. Reaction ranges from moderately acid to neutral.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 or 2. It is silt loam.

The BAg horizon is neutral in hue or has hue of 10YR to 5Y, has value of 4 to 6, and has chroma of 0 to 2. It is loam, silt loam, clay loam, or silty clay loam.

The Btg horizon is neutral in hue or has hue of 10YR to 5Y, has value of 4 to 6, and has chroma of 0 to 2. It is clay loam, silty clay loam, silty clay, or clay.

The Cg horizon is neutral in hue or has hue of 10YR to 5Y, has value of 4 to 6, and has chroma of 0 to 2. It is clay loam, silty clay loam, silty clay, or clay.

Melvin Series

Physiographic province: Valley and Ridge
Landform: Flood plains
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 2 percent

Associated Soils

- Maurertown soils, which have more clay in the subsoil than the Melvin soils
- Sindion, Speedwell, and Wheeling soils, which are better drained than the Melvin soils

Taxonomic Classification

Fine-silty, mixed, active, nonacid, mesic Fluvaquentic Endoaquepts

Typical Pedon

Melvin silt loam, 0 to 2 percent slopes, frequently flooded; about 1,250 feet south-southeast of the junction of U.S. Highway 11 and Highway VA-679, about 200 feet east of Highway VA-679, about 200 feet south of railroad tracks; Rural Retreat, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 53 minutes 18 seconds N. and long. 81 degrees 20 minutes 49 seconds W.

A—0 to 6 inches; dark brown (10YR 3/3) silt loam; weak very fine granular structure; friable, slightly sticky, slightly plastic; many fine roots; neutral; abrupt smooth boundary.

Bg1—6 to 13 inches; grayish brown (10YR 5/2) silt loam; weak very fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine roots; common fine prominent brownish yellow (10YR 6/8) masses of oxidized iron; neutral; gradual smooth boundary.

Bg2—13 to 31 inches; gray (10YR 5/1) silty clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; common fine prominent brownish yellow (10YR 6/8) masses of oxidized iron; neutral; clear smooth boundary.

Cg—31 to 62 inches; gray (10YR 5/1) silt loam; massive; friable, slightly sticky, slightly plastic; common fine prominent brownish yellow (10YR 6/8) masses of oxidized iron; 10 percent gravel; neutral.

Range in Characteristics

The solum ranges from 20 to 40 inches in thickness. Depth to bedrock is more than 60 inches. The content of rounded gravel ranges from 0 to 5 percent in the A, Ap, and Bg horizons and from 0 to 20 percent in the Cg horizon. Reaction ranges from moderately acid to slightly alkaline.

The A horizon, if it occurs, has hue of 10YR to 5Y and value and chroma of 2 or 3. It is silt loam.

The Bg horizon has hue of 10YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2. It is silt loam or silty clay loam.

The Cg horizon has hue of 10YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2. It is silt loam or silty clay loam that has strata of loam, clay, sand, or sand and gravel below a depth of 40 inches.

Newbern Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains; some areas are escarpments along rivers and streams
Parent material: Residuum weathered from shale interbedded with limestone
Drainage class: Somewhat excessively drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Shallow
Slope range: 7 to 99 percent

Associated Soils

- Carbo, Westmoreland, and Wurno soils, which are deeper to bedrock than the Newbern soils

Taxonomic Classification

Loamy, mixed, active, mesic Lithic Eutrudepts

Typical Pedon

Newbern silt loam in an area of Wurno-Newbern complex, 25 to 65 percent slopes; about 0.3 mile west-southwest of the junction of Highways VA-107 and VA-91, about 0.25 mile northwest of R.B. Worthy High School in Saltville; Saltville, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 52 minutes 54 seconds N. and long. 81 degrees 45 minutes 54 seconds W.

Ap—0 to 4 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 10 percent channers; neutral; abrupt smooth boundary.

Bw—4 to 11 inches; yellowish brown (10YR 5/6) channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and medium roots; 30 percent channers; neutral; abrupt wavy boundary.

Cr—11 to 15 inches; yellowish brown (10YR 5/6) partly weathered shale bedrock; silt loam material in fractures; abrupt smooth boundary.

R—15 inches; shale bedrock.

Range in Characteristics

Solum thickness and depth to bedrock range from 10 to 20 inches. The content of channers ranges, by volume, from 5 to 15 percent in the A horizon and from 5 to 80 percent in the B horizon but averages less than 35 percent in the control section. The content of channers generally increases as depth increases. In unlimed areas, reaction ranges from moderately acid to neutral.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. It is silt loam.

The Bw horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8. Texture in the fine-earth fraction is loam or silt loam.

The Cr horizon has hue of 10YR, value of 5 or 6, and chroma of 6 to 8. It is partly weathered shale that has loam or silt loam in cracks and crevices.

Poynor Series

Physiographic province: Valley and Ridge
Landform: Hills
Parent material: Residuum weathered from cherty dolomite
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 7 to 60 percent

Associated Soils

- Carbo soils, which are shallower to bedrock than the Poynor soils
- Frederick soils, which have fewer rock fragments than the Poynor soils

Taxonomic Classification

Loamy-skeletal over clayey, siliceous, semiactive, mesic Typic Paleudults

Typical Pedon

Poynor very gravelly silt loam, 15 to 25 percent slopes; about 0.7 mile north-northwest of Oak Grove Church, 0.7 mile north of the junction of Highways VA-610 and VA-633, in Rich Valley; Broadford, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 53 minutes 47 seconds N. and long. 81 degrees 40 minutes 13 seconds W.

A—0 to 6 inches; brown (10YR 4/3) very gravelly silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 55 percent chert gravel; very strongly acid; abrupt smooth boundary.

Bt1—6 to 30 inches; yellowish brown (10YR 5/4) extremely gravelly loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and medium roots; few distinct clay films on vertical and horizontal faces of peds; 65 percent chert gravel; very strongly acid; abrupt smooth boundary.

2Bt2—30 to 62 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; few fine roots; many distinct clay films on vertical and horizontal faces of peds; 5 percent chert gravel; very strongly acid.

Range in Characteristics

The solum ranges from 60 to more than 100 inches in thickness. The content of chert gravel and cobbles ranges from 35 to 60 percent in the A horizon, from 35 to 80 percent in the Bt horizon, and from 0 to 15 percent in the 2B horizon. In unlimed areas, reaction ranges from extremely acid to strongly acid.

The A horizon has hue of 10YR, value of 2 to 6, and chroma of 1 to 4. Texture in the fine-earth fraction is silt loam.

The Bt horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. Texture in the fine-earth fraction is silt loam, loam, or silty clay loam.

The 2Bt horizon has hue of 2.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. It is silty clay or clay.

Shelocta Series

Physiographic province: Valley and Ridge
Landform: Base of slopes of hills and mountains
Parent material: Colluvium derived from shale, siltstone, and sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 45 percent

Associated Soils

- Berks, Chiswell, Litz, Sylco, Sylvatus, and Weikert soils, which are shallower to bedrock than the Shelocta soils
- Groseclose and Tumbling soils, which have more clay in the subsoil than the Shelocta soils

Taxonomic Classification

Fine-loamy, mixed, active, mesic Typic Hapludults

Typical Pedon

Shelocta silt loam, 7 to 15 percent slopes; about 3.4 miles southwest of Cedar Springs; about 0.4 mile north-northeast of the junction of Highways VA-612 and VA-614, about 1.6 mile west of the junction of Highways VA-612 and VA-675, in a crop field; Cedar Springs, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 48 minutes 2 seconds N. and long. 81 degrees 20 minutes 33 seconds W.

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine and few medium roots; common medium pores; 5 percent subangular shale channers; strongly acid; abrupt smooth boundary.

BA—8 to 15 inches; brown (7.5YR 5/4) silt loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; many fine roots; common medium pores; 5 percent subangular shale channers; strongly acid; clear wavy boundary.

Bt1—15 to 34 inches; strong brown (7.5YR 4/6) silt loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine roots; common fine and common medium pores; common distinct clay films on vertical and horizontal faces of peds; 5 percent subangular shale channers; strongly acid; clear wavy boundary.

Bt2—34 to 46 inches; strong brown (7.5YR 5/6) silty clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; common fine pores; common distinct clay films on vertical and horizontal faces of peds; 10 percent subangular shale channers; strongly acid; abrupt wavy boundary.

Bt3—46 to 62 inches; strong brown (7.5YR 5/6) channery silty clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine pores; common distinct clay films on vertical and horizontal faces of peds; 18 percent subangular shale channers; strongly acid.

Range in Characteristics

The solum ranges from 40 to more than 60 inches in thickness. Depth to bedrock is more than 48 inches. The content of rock fragments ranges from 2 to 15 percent in the A and BA horizons, from 5 to 45 percent in individual Bt horizons, and from 15 to 70 percent in the C horizon. In unlimed areas, reaction is very strongly acid or strongly acid.

The A horizon, if it occurs, has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 3. It is silt loam or loam.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. It is silt loam.

The BA horizon has hue of 7.5YR to 2.5Y and value and chroma of 4 to 6. Texture in the fine-earth fraction is silt loam or silty clay loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. Texture in the fine-earth fraction is silty clay loam or silt loam.

The C horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 6. Texture in the fine-earth fraction is silt loam, silty clay loam, or clay loam.

Shottower Series

Physiographic province: Valley and Ridge
Landform: High stream terraces
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone; in the New River drainage system, the alluvium is mixed with materials derived from crystalline rocks
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 30 percent

Associated Soils

- Austinville soils, which are redder throughout than the Shottower soils
- Chiswell and Litz soils, which are shallower to bedrock than the Shottower soils
- Frederick, Groseclose, and Wyrick soils, which have angular rock fragments in residual parent material
- Marbie soils, which have a fragipan

Taxonomic Classification

Fine, kaolinitic, mesic Typic Paleudults

Typical Pedon

Shottower loam, 15 to 30 percent slopes (fig. 16); about 1.0 mile west of the junction of Highways VA-630 and VA-42, about 1.5 mile northeast of Gollehon Cemetery, 1.0 mile west-southwest of Rich Valley High School; Broadford, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 55 minutes 46 seconds N. and long. 81 degrees 38 minutes 44 seconds W.

Ap—0 to 9 inches; brown (7.5YR 4/4) loam; moderate medium granular structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; 5 percent rounded gravel; slightly acid; abrupt smooth boundary.

Bt1—9 to 21 inches; strong brown (7.5YR 5/6) clay loam; moderate fine subangular blocky structure; friable, moderately sticky, moderately plastic; common very fine and fine roots; common faint clay films on vertical and horizontal faces of peds; 3 percent rounded gravel; strongly acid; clear smooth boundary.

Bt2—21 to 32 inches; strong brown (7.5YR 5/8) clay; moderate fine and medium subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine roots; many distinct clay films on vertical and horizontal faces of peds; 5 percent rounded gravel; strongly acid; diffuse smooth boundary.

Bt3—32 to 62 inches; strong brown (7.5YR 5/8) clay; moderate fine subangular blocky structure; firm, moderately sticky, moderately plastic; many distinct clay films on vertical and horizontal faces of peds; 10 percent rounded gravel; strongly acid.

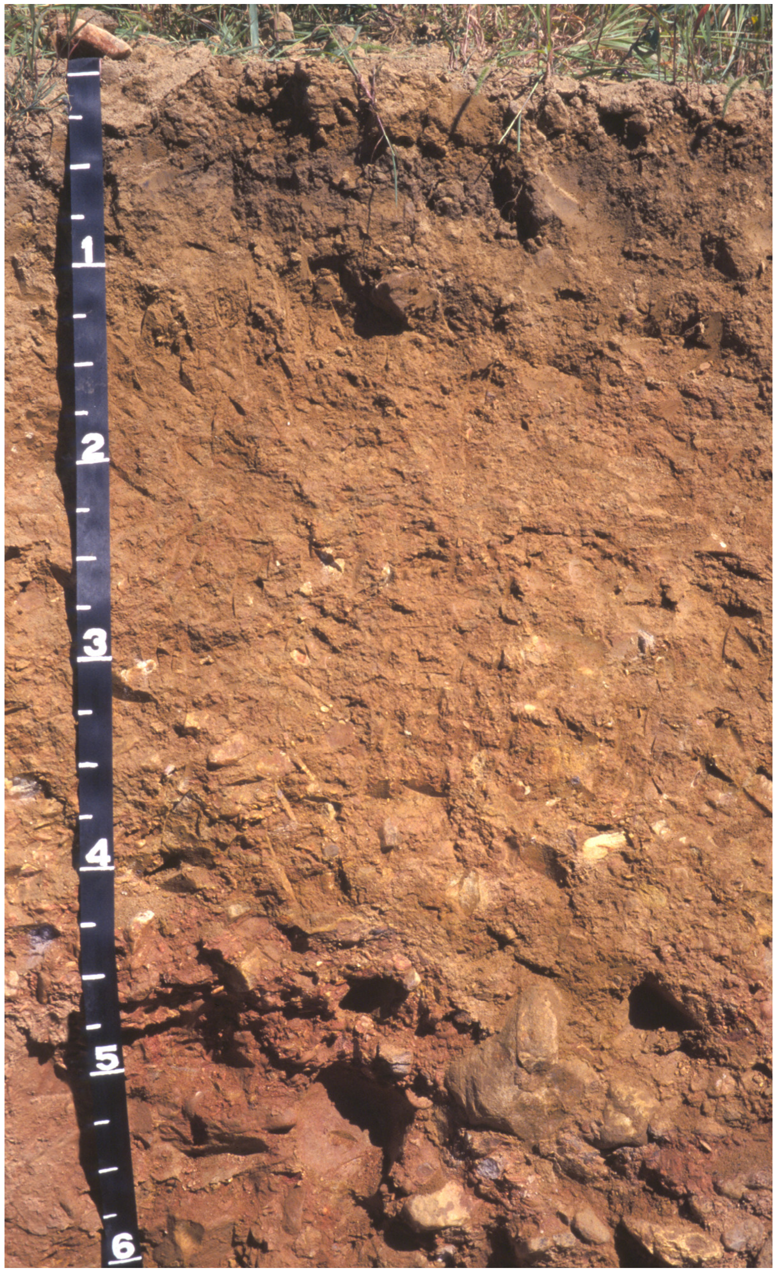

Figure 16.—Profile of a Shottower soil. Accumulated clay extends from a depth of about 9 inches to more than 60 inches. Typically, the volume of rounded sandstone and quartzite rock fragments in the soil profile increases as depth increases. Depth is marked in feet.

Range in Characteristics

Solum thickness and depth to bedrock are more than 60 inches. The content of gravel and cobbles ranges from 0 to 15 percent in the A and Ap horizons and in the upper part of the Bt horizon and from 0 to 60 percent in the lower part of the Bt horizon, below a depth of 40 inches. In unlimed areas, reaction ranges from extremely acid to moderately acid.

The A horizon, if it occurs, has hue of 5YR to 10YR and value and chroma of 2 or 3. It is fine sandy loam, loam, or silt loam.

The Ap horizon has hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 3 or 4. It is loam.

The upper part of the Bt horizon has hue of 10R to 7.5YR, value of 4 or 5, and chroma of 4 to 8. It is sandy clay loam, clay loam, silty clay loam, silty clay, or clay.

The lower part of the Bt horizon has hue of 10R to 7.5YR, value of 4 or 5, and chroma of 4 to 8. Texture in the fine-earth fraction is sandy clay loam, clay loam, silty clay loam, silty clay, or clay.

Sindion Series

Physiographic province: Valley and Ridge
Landform: Flood plains
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 2 percent

Associated Soils

- Well drained Wheeling soils and poorly drained Maurertown soils, which are on stream terraces
- Melvin soils, which are poorly drained
- Speedwell soils, which are well drained

Taxonomic Classification

Fine-loamy, mixed, active, mesic Fluvaquentic Hapludolls

Typical Pedon

Sindion silt loam, 0 to 2 percent slopes, occasionally flooded; about 0.4 mile north-northwest of the junction of Highways VA-609 and VA-774, about 1.0 mile northwest of the junction of Highways VA-637 and VA-774, about 0.75 mile south of Williams Cemetery; Chilhowie, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 49 minutes 41 seconds N. and long. 81 degrees 41 minutes 26 seconds W.

Ap—0 to 10 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate medium granular structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; neutral; clear smooth boundary.

A—10 to 17 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate medium granular structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; neutral; clear smooth boundary.

Bw1—17 to 26 inches; very dark grayish brown (10YR 3/2) loam, brown (10YR 4/3) dry; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine roots; common faint very dark gray (10YR 3/1) organic stains; neutral; clear smooth boundary.

Bw2—26 to 42 inches; yellowish brown (10YR 5/6) and dark gray (10YR 4/1) loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; 5 percent gravel; neutral; abrupt smooth boundary.

Cg1—42 to 54 inches; 60 percent dark gray (10YR 4/1) and 40 percent yellowish brown (10YR 5/6) loam; massive; friable, slightly sticky, slightly plastic; 3 percent cobbles and 7 percent gravel; neutral; abrupt smooth boundary.

Cg2—54 to 62 inches; 60 percent dark gray (10YR 4/1) and 40 percent yellowish brown (10YR 5/6) gravelly loam; massive; friable, slightly sticky, slightly plastic; 5 percent cobbles and 15 percent gravel; neutral.

Range in Characteristics

The solum ranges from 30 to 60 inches or more in thickness. Depth to bedrock is more than 60 inches. The content of gravel and cobbles ranges from 0 to 15 percent in the A, Ap, and Bw horizons and from 0 to 80 percent in the Cg horizon. Some pedons contain few or common flakes of mica. Reaction ranges from slightly acid to moderately alkaline.

The Ap horizon has hue of 7.5YR or 10YR and value and chroma of 2 or 3. It is silt loam.

The A horizon has hue of 7.5YR or 10YR and value and chroma of 2 or 3. It is sandy loam, fine sandy loam, loam, or silt loam.

The Bw horizon has hue of 7.5YR to 5Y, value of 2 to 7, and chroma of 1 to 6. It is loam, silt loam, clay loam, or silty clay loam.

The Bg horizon, if it occurs, has hue of 7.5YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2. Texture in the fine-earth fraction is loam, silt loam, clay loam, or silty clay loam.

The C horizon, if it occurs, has hue of 7.5YR to 5Y, value of 2 to 7, and chroma of 3 or 4. Texture in the fine-earth fraction is sandy loam, loam, silt loam, clay loam, or silty clay loam and, in many pedons, is stratified.

The Cg horizon has hue of 7.5YR to 5Y or is neutral in hue, has value of 2 to 7, and has chroma of 0 to 2. Texture in the fine-earth fraction is sandy loam, loam, silt loam, clay loam, or silty clay loam and, in many pedons, is stratified.

Speedwell Series

Physiographic province: Valley and Ridge
Landform: Flood plains
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 2 percent

Associated Soils

- Well drained Wheeling soils, which do not have a thick, dark surface layer; on terraces
- Poorly drained Maurertown soils, which are on terraces
- Well drained Sindion soils and poorly drained Melvin soils, which are on flood plains

Taxonomic Classification

Fine-loamy, mixed, active, mesic Fluventic Hapludolls

Typical Pedon

Speedwell fine sandy loam, 0 to 2 percent slopes, occasionally flooded; about 0.2 mile south of the junction of U.S. Highway 11 and Highway VA-638, about 0.5 mile south of the junction of Highways VA-638 and VA-644, about 0.1 mile east of Middle Fork Church; Chilhowie, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 48 minutes 36 seconds N. and long. 81 degrees 39 minutes 48 seconds W.

Ap—0 to 10 inches; dark brown (10YR 3/3) fine sandy loam, brown (10YR 4/3) dry; moderate fine granular structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; neutral; clear smooth boundary.

A—10 to 17 inches; dark brown (10YR 3/3) fine sandy loam, brown (10YR 4/3) dry; moderate fine and medium granular structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; neutral; clear smooth boundary.

Bw—17 to 41 inches; brown (10YR 4/3) loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine and fine roots; neutral; clear smooth boundary.
C—41 to 62 inches; brown (10YR 5/3) sandy loam; massive; friable, slightly sticky, slightly plastic; few very fine roots; common fine faint grayish brown (10YR 5/2) iron depletions and common fine prominent yellowish brown (10YR 5/8) masses of oxidized iron; neutral.

Range in Characteristics

The solum ranges from 30 to 60 inches or more in thickness. Depth to bedrock is more than 60 inches. The content of gravel and cobbles ranges from 0 to 15 percent in the A, Ap, and Bw horizons and from 0 to 80 percent in the C horizon. Some pedons contain few or common flakes of mica. Reaction ranges from slightly acid to moderately alkaline.

The Ap horizon has hue of 7.5YR or 10YR and value and chroma of 2 or 3. It is fine sandy loam.

The A horizon has hue of 7.5YR or 10YR and value and chroma of 2 or 3. It is sandy loam, fine sandy loam, loam, or silt loam.

The Bw horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. In some pedons the upper part of the Bw horizon has value of 2 or 3 and chroma of 2 to 4. The horizon is loam, silt loam, sandy clay loam, clay loam, or silty clay loam.

The C horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6. Texture in the fine-earth fraction is coarse sandy loam, sandy loam, loam, silt loam, sandy clay loam, or clay loam and, in many pedons, is stratified.

Sylco Series

Physiographic province: Blue Ridge
Landform: Mountains
Parent material: Residuum weathered from interbedded phyllite, slate, and fine-grained metasandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 15 to 70 percent

Associated Soils

- Lily soils, which have fewer rock fragments and more clay in the subsoil than the Sylco soils
- Shelocta soils, which are deeper to bedrock than the Sylco soils and formed in colluvial parent material
- Sylvatus soils, which are shallower to bedrock than the Sylco soils

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Typical Pedon

Sylco channery silt loam in an area of Sylco-Sylvatus complex, 35 to 70 percent slopes; about 2,700 feet southeast of Carmi Church in Camp, 2,100 feet south-southeast of the junction of Highways VA-612 and VA-798; Cedar Springs, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 46 minutes 45 seconds N. and long. 81 degrees 16 minutes 46 seconds W.

Oi—0 to 2 inches; slightly decomposed plant material.

A—2 to 6 inches; dark grayish brown (10YR 4/2) channery silt loam; weak fine granular structure; friable, nonsticky, nonplastic; common fine and medium and many very fine roots; 30 percent channers; very strongly acid; clear smooth boundary.
Bw1—6 to 19 inches; yellowish brown (10YR 5/4) very channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 40 percent channers; very strongly acid; gradual wavy boundary.
Bw2—19 to 31 inches; yellowish brown (10YR 5/6) very channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; 45 percent channers; very strongly acid; clear wavy boundary.
C—31 to 36 inches; yellowish brown (10YR 5/6) extremely channery silt loam; massive; friable, slightly sticky, slightly plastic; few fine roots; 70 percent channers; very strongly acid; clear wavy boundary.
R—36 inches; phyllite bedrock.

Range in Characteristics

Solum thickness and depth to bedrock range from 20 to 40 inches. The content of channers ranges from 15 to 35 percent in the A and E horizons, from 15 to 45 percent in the Bw horizon, and from 40 to 70 percent in the C horizon. In unlimed areas, reaction is extremely acid to strongly acid.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2. Texture in the fine-earth fraction is silt loam.

The E horizon, if it occurs, has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Texture in the fine-earth fraction is silt loam.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. Texture in the fine-earth fraction is silt loam.

The C horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. Texture in the fine-earth fraction is silt loam.

Sylvatus Series

Physiographic province: Blue Ridge
Landform: Mountains
Parent material: Residuum weathered from interbedded phyllite, slate, and fine-grained metasandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Shallow
Slope range: 15 to 70 percent

Associated Soils

- Shelocta soils, which are deeper to bedrock than the Sylvatus soils and formed in colluvial parent material
- Sylco soils, which are shallower to bedrock than the Sylvatus soils
- Lily soils, which have fewer rock fragments and more clay in the subsoil than the Sylco soils

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts

Typical Pedon

Sylvatus very channery silt loam in an area of Sylco-Sylvatus complex, 35 to 70 percent slopes; about 3,700 feet west of the junction of Highways VA-16 and VA-650,

about 2,600 feet northwest of the junction of Highways VA-741 and VA-16, in the Jefferson National Forest; Trout Dale, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 43 minutes 13 seconds N. and long. 81 degrees 28 minutes 27 seconds W.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) very channery silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many very fine and fine, common medium, and few coarse roots; 35 percent channers; very strongly acid; clear smooth boundary.

Bw—2 to 12 inches; brownish yellow (10YR 6/6) extremely channery silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; few fine, medium, and coarse roots; 75 percent channers; very strongly acid; clear wavy boundary.

R—12 inches; phyllite bedrock.

Range in Characteristics

The solum ranges from 10 to 18 inches in thickness. Depth to bedrock ranges from 10 to 20 inches. The content of channers ranges from 35 to 55 percent in the A horizon, from 35 to 80 percent in the Bw horizon, and from 45 to 90 percent in the C horizon. In unlimed areas, reaction is extremely acid or very strongly acid.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 to 4. Texture in the fine-earth fraction is silt loam.

The Bw horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. Texture in the fine-earth fraction is silt loam.

The C horizon, if it occurs, has hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 1 to 8. Texture in the fine-earth fraction is silt loam.

Tate Series

Physiographic province: Blue Ridge
Landform: Base of slopes of mountains near Mount Rogers
Parent material: Alluvium and colluvium derived from rhyolite, gneiss, and granite
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 7 percent

Associated Soils

- Derroc soils, which have more rock fragments than the Tate soils; on flood plains
- Konnarock soils, which are shallower to bedrock than the Tate soils
- Greenlee soils, which have more rock fragments throughout than the Tate soils

Taxonomic Classification

Fine-loamy, mixed, semiactive, mesic Typic Hapludults

Typical Pedon

Tate loam, 2 to 7 percent slopes; about 0.6 mile east of the junction of Highways VA-600 and VA-603, about 1.1 mile southwest of Laurel Valley Church, 0.3 mile northeast of Laurel Cemetery, about 2.0 miles east of Konnarock; Whitetop Mountain, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 40 minutes 27 seconds N. and long. 81 degrees 36 minutes 8 seconds W.

Ap—0 to 6 inches; dark yellowish brown (10YR 3/4) loam; weak very fine granular structure; friable, slightly sticky, slightly plastic; many fine roots; 5 percent gravel; strongly acid; abrupt smooth boundary.

BA—6 to 13 inches; yellowish brown (10YR 5/6) loam; weak fine subangular blocky

structure; friable, slightly sticky, slightly plastic; common fine roots; 5 percent gravel; strongly acid; clear smooth boundary.

Bt—13 to 44 inches; yellowish brown (10YR 5/6) clay loam; moderate very fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; common distinct clay films on vertical and horizontal faces of peds; 5 percent gravel; strongly acid; clear smooth boundary.

C—44 to 62 inches; light yellowish brown (10YR 6/4) gravelly loamy sand; many medium faint very pale brown (10YR 7/3) mottles; massive; friable, slightly sticky, nonplastic; few fine roots; 5 percent cobbles and 25 percent gravel; strongly acid.

Range in Characteristics

The solum is 24 to 60 inches or more in thickness. Depth to bedrock is more than 60 inches. The content of rock fragments ranges from 0 to 15 percent in the Ap and BA horizons, from 0 to 35 percent in the Bt horizon, and from 5 to 60 percent in the C horizon. In unlimed areas, reaction is very strongly acid or strongly acid.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. It is loam.

The BA horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. Texture in the fine-earth fraction is loam, sandy clay loam, or clay loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 to 8. Texture in the fine-earth fraction is loam, sandy clay loam, or clay loam.

The C horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. Texture in the fine-earth fraction is loamy sand, sandy loam, or loam.

Timberville Series

Physiographic province: Valley and Ridge
Landform: Intermittent drainageways in valleys
Parent material: Colluvium and alluvium derived from limestone, shale, and sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 7 percent

Associated Soils

- Frederick soils, which do not have buried horizons
- Marbie soils, which have a fragipan
- Wyrick soils, which have less clay in the subsoil than the Timberville soils

Taxonomic Classification

Fine, mixed, active, mesic Typic Hapludults

Typical Pedon

Timberville silt loam, 0 to 7 percent slopes, rarely flooded; about 1.0 mile northeast of the junction of Highways VA-622 and VA-617, about 1.0 mile southwest of Calhoun Cemetery, 1.25 miles east of Bear Creek; Nebo, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 52 minutes 46 seconds N. and long. 81 degrees 25 minutes 30 seconds W.

Ap—0 to 12 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many very fine roots; 2 percent gravel; neutral; clear smooth boundary.

Ab—12 to 25 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; common very fine roots; 5 percent gravel; slightly acid; clear smooth boundary.

2Btb1—25 to 42 inches; dark yellowish brown (10YR 4/6) silty clay loam; weak fine and medium subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine roots; many distinct clay films on vertical and horizontal faces of peds; 5 percent gravel; moderately acid; clear smooth boundary.

2Btb2—42 to 62 inches; dark yellowish brown (10YR 4/6) clay loam; weak fine and medium subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine roots; common distinct clay films on vertical and horizontal faces of peds; 10 percent gravel; moderately acid.

Range in Characteristics

Solum thickness and depth to bedrock are more than 60 inches. The content of gravel and cobbles ranges from 0 to 15 percent in the A or Ap horizons and from 0 to 60 percent in the Bw, Ab, Bwb, and 2Btb horizons. In unlimed areas, reaction ranges from extremely acid to slightly acid.

The A horizon, if it occurs, has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 5. It is fine sandy loam, loam, or silt loam.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 5. It is silt loam.

The Bw horizon, if it occurs, has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. Texture in the fine-earth fraction is silt loam, clay loam, or silty clay loam.

The Ab horizon has hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 2 to 4. Texture in the fine-earth fraction is loam, silt loam, or silty clay loam.

The Bwb horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. Texture in the fine-earth fraction is loam, silt loam, sandy clay loam, clay loam, or silty clay loam.

The 2Btb horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. Texture in the fine-earth fraction is clay loam, silty clay loam, silty clay, or clay.

Tumbling Series

Physiographic province: Valley and Ridge
Landform: Base of slopes of hills and mountains and areas on hills and mountains
Parent material: Colluvium derived from sandstone, quartzite, and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 65 percent

Associated Soils

- Carbo soils, which are shallower to bedrock than the Tumbling soils
- Derroc soils, which have more rock fragments in the profile than the Tumbling soils; on flood plains
- Lily soils, which have less clay in the subsoil than the Tumbling soils and are shallower to bedrock
- Shelocta soils, which have less clay in the subsoil than the Tumbling soils

Taxonomic Classification

Fine, kaolinitic, mesic Typic Paleudults

Typical Pedon

Tumbling loam, 2 to 7 percent slopes; about 1.2 miles northwest of the junction of Highways VA-614 and VA-749, about 1.1 miles west of the junction of Highways VA-749 and VA-670, northwest of Cedar Springs, in cropland; Cedar Springs, Virginia

USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 50 minutes 26 seconds N. and long. 81 degrees 18 minutes 19 seconds W.

Ap—0 to 9 inches; dark yellowish brown (10YR 4/4) loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine roots; strongly acid; abrupt smooth boundary.

Bt1—9 to 16 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; firm, slightly sticky, slightly plastic; common fine roots; common distinct clay films on vertical and horizontal faces of peds; strongly acid; clear smooth boundary.

Bt2—16 to 34 inches; strong brown (7.5YR 5/6) clay loam; weak medium subangular blocky structure; firm, slightly sticky, slightly plastic; few fine roots; common distinct clay films on vertical and horizontal faces of peds; strongly acid; clear smooth boundary.

Bt3—34 to 44 inches; strong brown (7.5YR 5/6) clay loam; common medium prominent red (2.5YR 5/8) mottles; weak medium subangular blocky structure; firm, slightly sticky, slightly plastic; few fine roots; common distinct clay films on vertical and horizontal faces of peds; very strongly acid; clear smooth boundary.

Bt4—44 to 62 inches; yellowish red (5YR 5/6) clay loam; common fine faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm, slightly sticky, slightly plastic; common distinct clay films on vertical and horizontal faces of peds; very strongly acid.

Range in Characteristics

The solum is 60 inches or more in thickness. Depth to bedrock is more than 72 inches. The content of rock fragments ranges from 0 to 15 percent in the Ap horizon and from 0 to 35 percent in the Bt horizon. In unlimed areas, reaction is very strongly acid or strongly acid.

The Ap horizon has hue of 10YR, value of 4 or 5 (more than 5.5 dry), and chroma of 3 or 4. It is loam.

The Bt horizon has hue of 2.5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. Texture in the fine-earth fraction is clay loam, silty clay loam, or clay.

Udorthents

Physiographic province: Valley and Ridge
Landform: Hills and stream terraces
Parent material: Fill material from a variety of sources
Drainage class: Moderately well drained or well drained
Slowest saturated hydraulic conductivity: Moderately low to high
Depth class: Shallow to very deep
Slope range: 0 to 25 percent

Associated Soils

- Frederick soils, which are undisturbed; on terraces
- Wheeling soils, which are on terraces

Typical Pedon

Udorthents formed when soils were disturbed by land leveling, excavation, or filling. They consist of loamy and clayey soil material and varying amounts of rock fragments. Depth to hard bedrock varies from a few inches to more than 5 feet. Areas range from slightly compacted to severely compacted. Unvegetated areas are susceptible to severe erosion. Drainage is variable. Because of the variability of the soil material, a typical pedon is not given.

Range in Characteristics

Excavation or filling has destroyed all discernible diagnostic horizons. Depth to bedrock ranges from 10 inches to more than 72 inches. The content of rock fragments ranges from 0 to 90 percent. In unlimed areas, reaction is extremely acid to slightly acid throughout the profile.

The A horizon, if it occurs, has hue of 2.5YR or 2.5Y, value of 4 to 8, and chroma of 3 to 8. Texture in the fine-earth fraction is loamy sand to clay.

The C horizon has hue of 2.5YR to 5Y or is neutral in hue and has value and chroma of 3 to 8. Texture in the fine-earth fraction is loamy sand to clay.

Weikert Series

Physiographic province: Valley and Ridge
Landform: Hills and mountains
Parent material: Residuum weathered from shale interbedded with siltstone and sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Shallow
Slope range: 15 to 70 percent

Associated Soils

- Berks, Calvin, Laidig, Shelocta, and Tumbling soils, which are deeper to bedrock than the Weikert soils

Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts

Typical Pedon

Weikert very channery silt loam in an area of Weikert-Berks complex, 35 to 70 percent slopes; about 3,000 feet east-northeast of the junction of Highways VA-16 and VA-348 in Hungry Mother State Park, near the trail to Mollys Knob; Chatham Hill, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 53 minutes 8 seconds N. and long. 81 degrees 30 minutes 59 seconds W.

A—0 to 2 inches; dark yellowish brown (10YR 4/4) very channery silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; 45 percent channers; very strongly acid; abrupt smooth boundary.

Bw—2 to 12 inches; yellowish brown (10YR 5/4) extremely channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine and fine roots; common faint silt coats on rock fragments and on all faces of peds; 85 percent channers; very strongly acid; abrupt smooth boundary.

R—12 inches; shale bedrock.

Range in Characteristics

The solum ranges from 8 to 20 inches in thickness. Depth to bedrock ranges from 10 to 20 inches. The content of gravel and channers ranges from 35 to 50 percent in the A horizon, from 35 to 85 percent in the Bw horizon, and from 60 to 85 percent in the C horizon. Reaction ranges from very strongly acid to moderately acid.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. Texture in the fine-earth fraction is silt loam.

The Bw horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. Texture in the fine-earth fraction is loam or silt loam.

The C horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. Texture in the fine-earth fraction is loam or silt loam.

Westmoreland Series

Physiographic province: Valley and Ridge
Landform: Mountains
Parent material: Residuum weathered from interbedded limestone, shale, and siltstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Deep
Slope range: 15 to 65 percent

Associated Soils

- Carbo, Newbern, and Wurno soils, whihch are shallower to bedrock than the Westmoreland soils

Taxonomic Classification

Fine-loamy, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Westmoreland silt loam in an area of Newbern-Westmoreland complex, 25 to 65 percent slopes; about 6.25 miles northeast of Marion, Virginia, about 1.1 mile south-southwest of the junction of Highways VA-16 and VA-610, about 1.6 mile north of the junction of Highways VA-16 and VA-348, in woodland; Chatham Hill, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 54 minutes 43 seconds N. and long. 81 degrees 31 minutes 52 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak very fine granular structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; many fine and very fine interstitial pores; 10 percent angular shale channers; moderately acid; abrupt smooth boundary.

BA—8 to 16 inches; yellowish brown (10YR 5/8) silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; 10 percent angular shale channers; moderately acid; clear smooth boundary.

Bt—16 to 34 inches; yellowish brown (10YR 5/8) silty clay loam; moderate fine subangular blocky structure; friable, moderately sticky, slightly plastic; common very fine and fine roots; few fine and common very fine interstitial pores; common distinct clay films on vertical and horizontal faces of peds; 10 percent angular shale channers; moderately acid; clear wavy boundary.

BCt—34 to 39 inches; yellowish brown (10YR 5/8) channery silty clay loam; weak fine subangular blocky structure; friable, moderately sticky, slightly plastic; few fine and common very fine interstitial pores; common distinct clay films on vertical and horizontal faces of peds; 30 percent angular shale channers; moderately acid; clear wavy boundary.

C—39 to 47 inches; yellowish brown (10YR 5/8) extremely channery silt loam; massive; friable, slightly sticky, nonplastic; few fine and common very fine interstitial pores; 80 percent angular shale channers; moderately acid; abrupt smooth boundary.

R—47 inches; shale bedrock.

Range in Characteristics

The solum ranges from 20 to 40 inches in thickness. Depth to bedrock ranges from 40 to 60 inches. The content of rock fragments ranges from 2 to 15 percent in the Ap

and BA horizons, from 2 to 30 percent in the Bt horizon, from 5 to 70 percent in the BC horizon, and from 45 to 90 percent in the C horizon. In unlimed areas, reaction ranges from very strongly acid to moderately acid in the solum. It is strongly acid or moderately acid in the C horizon.

The A horizon, if it occurs, has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is loam, silt loam, or silty clay loam.

The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. It is silt loam.

The BA horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. It is loam, silt loam, or silty clay loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. Texture in the fine-earth fraction is loam, silt loam, or silty clay loam.

The BCt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. Texture in the fine-earth fraction is loam, silt loam, or silty clay loam.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 8. Texture in the fine-earth fraction is loam, silt loam, or silty clay loam.

Wheeling Series

Physiographic province: Valley and Ridge
Landform: Stream terraces along the Middle and South Forks of the Holston River
Parent material: Alluvium derived from limestone, sandstone, siltstone, and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 7 percent

Associated Soils

- Maurertown and Melvin soils, which are poorly drained
- Sindion and Speedwell soils, which have a thick, dark surface layer and are subject to more frequent flooding than the Wheeling soils

Taxonomic Classification

Fine-loamy, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Wheeling loam, 2 to 7 percent slopes, rarely flooded; about 0.01 mile northeast of the junction of Highways VA-645 and VA-643, about 1.5 miles southwest of the junction of Highways VA-644 and VA-645, about 0.06 mile east of the Middle Fork of the Holston River; Marion, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 49 minutes 6 seconds N. and long. 81 degrees 36 minutes 58 seconds W.

Ap—0 to 9 inches; brown (10YR 4/3) loam; moderate fine and medium granular structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; slightly acid; abrupt smooth boundary.

Bt1—9 to 36 inches; brown (7.5YR 5/4) clay loam; weak medium subangular blocky structure; friable, moderately sticky, moderately plastic; common very fine and fine roots; common distinct clay films on vertical and horizontal faces of peds; common black (10YR 2/1) manganese coatings; moderately acid; gradual smooth boundary.

Bt2—36 to 49 inches; dark yellowish brown (10YR 4/6) sandy clay loam; weak very fine subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; common distinct clay films on vertical and horizontal faces of peds; common black (10YR 2/1) manganese coatings; moderately acid; clear wavy boundary.

BC—49 to 62 inches; dark yellowish brown (10YR 4/6) sandy loam; weak very fine subangular blocky structure; friable, slightly sticky, nonplastic; moderately acid.

Range in Characteristics

The solum ranges from 40 to 60 inches or more in thickness. Depth to bedrock is more than 60 inches. The content of gravel and cobbles ranges from 0 to 15 percent throughout the profile. In some pedons it ranges to 60 percent below a depth of 40 inches. In unlimed areas, reaction is strongly acid or moderately acid.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. It is loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. It is clay loam, sandy clay loam, loam, silt loam, or silty clay loam.

The BC horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. It is sandy loam or very fine sandy loam.

The C horizon, if it occurs, has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. Texture in the fine-earth fraction is stratified and ranges from loam to sand.

Wolfgap Series

Physiographic province: Valley and Ridge
Landform: Flood plains
Parent material: Alluvium derived from limestone, shale, siltstone, and sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 2 percent

Associated Soils

- Botetourt, Derroc, and Ingledove soils, which have a surface layer that is lighter colored than that of the Wolfgap soils

Taxonomic Classification

Fine-loamy, siliceous, active, mesic Fluventic Hapludolls

Typical Pedon

Wolfgap clay loam, 0 to 2 percent slopes, occasionally flooded; about 0.3 mile west of the junction of Highways VA-42 and VA-630, about 2.3 miles east of the junction of Highways VA-42 and VA-91, in cropland; Broadford, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 55 minutes 50 seconds N. and long. 81 degrees 37 minutes 45 seconds W.

Ap—0 to 11 inches; dark brown (10YR 3/3) clay loam, yellowish brown (10YR 5/4) dry; moderate fine granular structure; friable, slightly sticky, slightly plastic; many fine and medium roots; neutral; abrupt smooth boundary.

Bw1—11 to 35 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine roots; neutral; diffuse smooth boundary.

Bw2—35 to 58 inches; strong brown (7.5YR 4/6) sandy clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; neutral; gradual smooth boundary.

C—58 to 72 inches; strong brown (7.5YR 4/6) extremely gravelly fine sandy loam; massive; friable, slightly sticky, slightly plastic; 65 percent well rounded sandstone gravel; neutral.

Range in Characteristics

The solum ranges from 30 to 60 inches or more in thickness. Depth to bedrock is more than 60 inches. The content of gravel and cobbles ranges from 0 to 15 percent in the A and Ap horizons, from 0 to 35 percent in the Bw horizon, and from 15 to 80 percent in the C horizon. Reaction ranges from slightly acid to moderately alkaline.

The Ap horizon has hue of 7.5YR or 10YR and value and chroma of 2 or 3. It is clay loam.

The A horizon, if it occurs, has hue of 7.5YR or 10YR and value and chroma of 2 or 3. It is sandy loam, fine sandy loam, loam, silt loam, or clay loam.

The Bw horizon typically has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. In some pedons, the upper part of the horizon has value of 2 or 3 and chroma of 1 to 3. Texture in the fine-earth fraction is loam, silt loam, sandy clay loam, or clay loam.

The C horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6. Texture in the fine-earth fraction is loamy sand, sandy loam, fine sandy loam, loam, or silt loam.

Wurno Series

Physiographic province: Valley and Ridge
Landform: Hills
Parent material: Residuum weathered from interbedded calcareous shale and limestone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 7 to 65 percent

Associated Soils

- Carbo soils, which have more clay in the subsoil than the Wurno soils
- Frederick and Westmoreland soils, which are deeper to bedrock than the Wurno soils
- Newbern soils, which are shallower to bedrock than the Wurno soils

Taxonomic Classification

Loamy-skeletal, mixed, semiactive, mesic Dystric Eutrudepts

Typical Pedon

Wurno silt loam in an area of Wurno-Newbern complex, 25 to 65 percent slopes; about 0.3 mile southwest of the junction of Highways VA-107 and VA-91, about 0.25 mile northwest of R.B. Worthy High School in Saltville; Saltville, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 52 minutes 50 seconds N. and long. 81 degrees 45 minutes 57 seconds W.

Ap—0 to 5 inches; dark brown (10YR 3/3) silt loam; weak very fine granular structure; friable, nonsticky, nonplastic; many very fine and fine roots; 10 percent channers; slightly acid; abrupt smooth boundary.

Bw1—5 to 11 inches; yellowish brown (10YR 5/6) channery silt loam; weak very fine subangular blocky structure; friable, slightly sticky, slightly plastic; many very fine and fine roots; 25 percent channers; slightly acid; abrupt smooth boundary.

Bw2—11 to 22 inches; yellowish brown (10YR 5/6) very channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine roots; 55 percent channers; slightly acid; clear wavy boundary.

C—22 to 29 inches; yellowish brown (10YR 5/6) extremely channery silt loam; massive; friable, slightly sticky, nonplastic; few very fine roots; 70 percent channers; neutral; abrupt smooth boundary.
Cr—29 to 33 inches; brownish yellow (10YR 6/8) weathered shale bedrock; few very fine roots in cracks; abrupt smooth boundary.
R—33 inches; calcareous shale interbedded with limestone bedrock.

Range in Characteristics

The solum ranges from 10 to 30 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. The content of channers ranges from 5 to 15 percent in the A and Ap horizons and from 5 to 90 percent in the Bw and C horizons but averages more than 35 percent at a depth of 10 to 40 inches or at a depth of 10 inches to bedrock. Reaction ranges from very strongly acid to mildly alkaline in the A, Ap, and Bw horizons and is neutral or mildly alkaline in the C horizon.

The A horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. It is silt loam.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. It is silt loam.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. Texture in the fine-earth fraction is silt loam or silty clay loam.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. Texture in the fine-earth fraction is loam or silt loam.

The Cr horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. It is weathered, interbedded calcareous shale and limestone.

Wyrick Series

Physiographic province: Valley and Ridge
Landform: Intermittent drainageways and base of slopes of hills
Parent material: Colluvium and alluvium derived from limestone, shale, siltstone, and fine-grained sandstone over residuum weathered from limestone and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 25 percent

Associated Soils

- Frederick, Shottower, and Timberville soils, which have more clay in the subsoil than the Wyrick soils
- Marbie soils, which have a fragipan

Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Typic Paleudults

Typical Pedon

Wyrick silt loam in an area of Wyrick-Marbie complex, 7 to 15 percent slopes; about 0.6 mile southwest of the junction of Highways VA-619 and VA-42, about 0.25 mile south of the junction of Highways VA-42 and VA-717, about 0.25 mile south of Possum Jaw Creek Sink, about 0.9 mile east of the junction of Highways VA-622 and VA-42; Nebo, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 57 minutes 45 seconds N. and long. 81 degrees 26 minutes 4 seconds W.

Ap—0 to 9 inches; dark yellowish brown (10YR 3/4) silt loam; moderate medium

granular structure; friable, slightly sticky, slightly plastic; many very fine roots; moderately acid; abrupt smooth boundary.

BA—9 to 17 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine roots; 2 percent gravel; strongly acid; clear wavy boundary.

Bt1—17 to 35 inches; strong brown (7.5YR 5/6) silty clay loam; few medium faint yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable, moderately sticky, slightly plastic; few very fine roots; many distinct clay films on vertical and horizontal faces of peds; few iron-manganese nodules; 5 percent gravel; very strongly acid; gradual wavy boundary.

Bt2—35 to 51 inches; strong brown (7.5YR 5/6) silty clay loam; few medium faint yellowish brown (10YR 5/6) mottles; weak very fine and fine subangular blocky structure; friable, moderately sticky, moderately plastic; many distinct clay films on vertical and horizontal faces of peds; few iron-manganese nodules; 5 percent gravel; very strongly acid; clear wavy boundary.

2Bt3—51 to 62 inches; strong brown (7.5YR 5/6) silty clay; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; many distinct clay films on vertical and horizontal faces of peds; few iron-manganese nodules and manganese coatings; 10 percent gravel; very strongly acid.

Range in Characteristics

The solum ranges from 40 to 60 inches or more in thickness. Depth to a lithologic discontinuity ranges from 20 to 60 inches. Depth to bedrock is more than 60 inches. The content of gravel ranges from 0 to 15 percent in the A, Ap, Bt, 2Bt, and 2C horizons. In unlimed areas, reaction ranges from extremely acid to strongly acid.

The A horizon, if it occurs, has hue of 7.5YR or 10YR and value and chroma of 2 or 3. It is loam, silt loam, or silty clay loam.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. It is silt loam.

The BA horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. It is loam, silt loam, or silty clay loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8. It is loam, silt loam, clay loam, or silty clay loam.

The 2Bt horizon has hue of 5YR to 10YR and value and chroma of 4 to 8. It is silty clay loam, silty clay, or clay.

The 2C horizon, if it occurs, has hue of 5YR to 2.5Y and value and chroma of 4 to 8. It is loam, silt loam, clay loam, silty clay loam, silty clay, or clay.

Formation of the Soils

In this section, the factors and processes that have affected the formation and morphology of the soils in Smyth County are described. The processes of horizon differentiation are also discussed.

Factors of Soil Formation

Soils are intimate mixtures of broken and partly or completely weathered rock, minerals, organic matter, living plants and animals, water, and air *(18)*. They occur as part of the natural landscape and differ from place to place. They differ in occurrence, in degree of development of various horizons, in mineral content, in depth over bedrock, and in texture, color, and slope. The characteristics of the soils in any given area depend upon the interaction of the five factors of soil formation, which are parent material, climate, living organisms, topography, and time. Topography over time modifies the effect of climate and living organisms on parent material *(7)*.

In theory, if all of the soil-forming factors were identical at different sites, the soils at these sites would be identical. However, all of these factors influence the genesis of every soil and their relative importance varies from place to place. One factor may outweigh others in the formation of a soil and may determine most of its properties. For example, very young soils on flood plains may have only faint soil horizonation because the soil-forming factors have been active only a short time. In contrast, soils that formed in residum from bedrock on a stable landscape may have distinct horizons. The horizons are distinct because the soil material has remained largely in place and all of the soil-forming factors have been active for a long time. In general, however, the combined action of the five factors determines the character of each soil. The interaction of the five factors of soil formation is more complex for some soils than for others.

Parent Material

Parent material is the unconsolidated mass from which a soil forms. It is largely responsible for the chemical and mineralogical composition of the soil and the rate at which the soil-forming processes take place. In Smyth County the parent material is residual, alluvial, or colluvial.

Some residual parent materials are limestone, shale, siltstone, or sandstone (fig. 17). The soils that formed in residuum derived from limestone, dolomite, and shale have a wide range of characteristics and are most extensive on uplands of the Appalachian Valley. The soils that formed in residuum derived from limestone typically have a silty surface layer and a clayey subsoil. They include Austinville, Carbo, and Frederick soils. Residuum derived from acid shale and siltstone is the parent material of Berks soils. On the Appalachian Ridge, Dekalb, Drypond, and Lily soils formed in residuum derived from coarse textured, acid sandstone.

The soils on the Blue Ridge derived from rocks that show some degree of metamorphosis. For example, Sylco and Sylvatus soils formed in residuum derived from low-grade phyllite. Konnarock soils formed in residuum derived from tillite.

Alluvial parent material originated locally, along the smaller streams and along forks

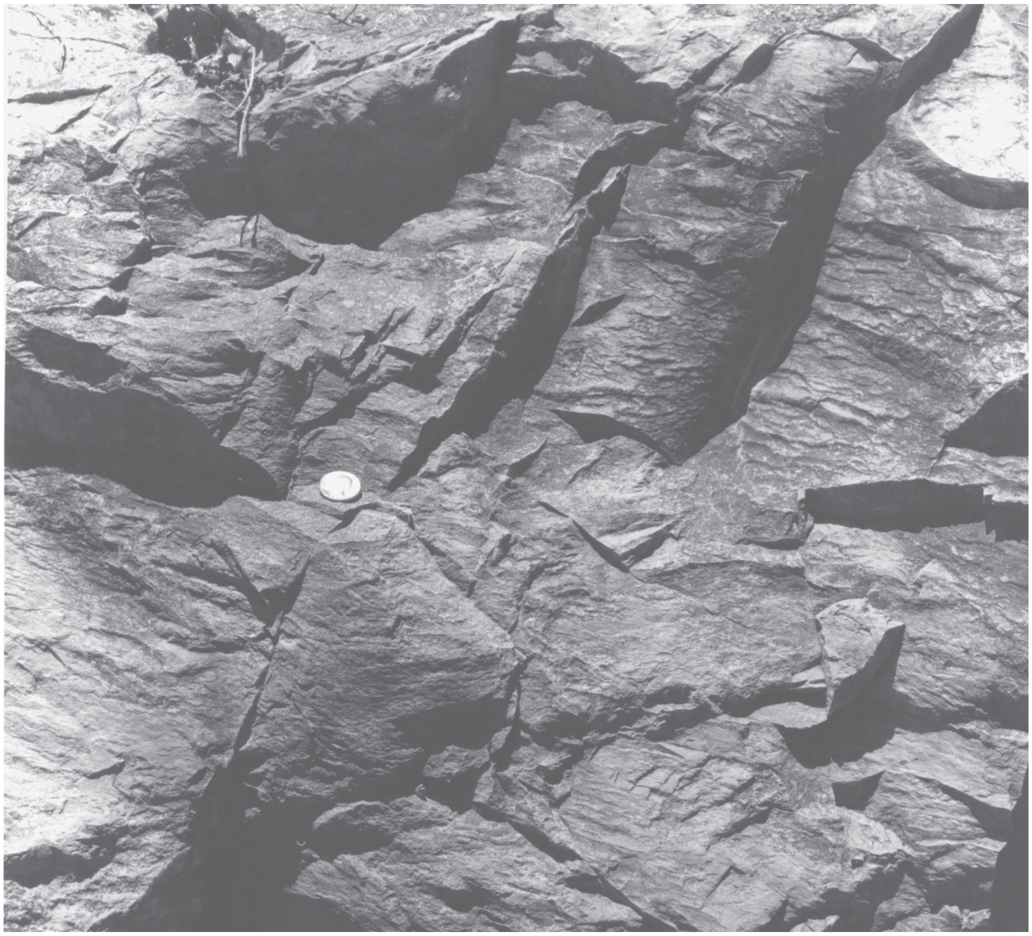

Figure 17.—Limestone bedrock with joints that may eventually form solution channels. A coin shows the scale.

of the Holston River. The soils that formed in alluvium have a wide range of texture and development. They include Botetourt, Derroc, Melvin, Shottower, Sindion, Speedwell, Wheeling, and Wolfgap soils.

Colluvial parent material dominantly is along the lower side slopes, footslopes, and toeslopes of mountains. Mainly moderately coarse textured, medium textured, or moderately fine textured soils formed in colluvial parent material. Examples are Laidig, Marbie, Tumbling, Shelocta, Tate, and Wyrick soils.

Climate

Climate affects physical, chemical, and biological relationships in soils through the influence of precipitation and temperature. Water in the soil dissolves both minerals and organic residue through the surface layer and in the subsoil. Soil temperature determines both the type and speed of physical, chemical, and biological activities.

Because precipitation in Smyth County exceeds evapotranspiration, the soils have been leached. Water has removed from the soil much soluble material that was present originally or that was released through weathering. The exceptions are areas of alluvial soils that limestone springs recharge with carbonates and areas of shallow soils overlying dolomite bedrock. Water percolating through the soil moves clay from the surface layer and into the subsoil. Typically, the soils in Smyth County have more

clay in the subsoil than in the surface layer. The exceptions are soils that formed in recent alluvium or in sand or soils on very steep slopes.

Climate has also influenced the formation of blocky structure in the subsoil of well developed soils. Changes in volume of soil mass partly cause the development of peds, or aggregates, in the subsoil. These changes are primarily the result of alternating periods of wetting and drying.

Plant and Animal Life

Microorganisms, vegetation, animals, and humans influence the formation of soils. Vegetation is generally responsible for the amount of organic matter in the soil and the color of the surface layer. Earthworms, cicada, and burrowing animals help to keep the soil open and porous. Microorganisms decompose both vegetation and dead animal matter, thus releasing nutrients for plant food.

Before the survey area was settled, the native vegetation was the major living organism affecting soil development. It consisted mainly of hardwoods. Oaks, hickories, and chestnuts were the dominant trees in the original forest cover, and hemlock and eastern white pine were the most abundant conifers in the cooler areas. Most hardwoods use a large amount of available calcium and other bases and constantly recycle them through leaf fall and decay. Coniferous trees recycle smaller amounts of bases than deciduous trees. As a result, more bases have been leached from soils that developed under coniferous vegetation than from soils that developed under deciduous vegetation.

On mountains the soils developed under hardwood forest and are underlain by acid parent rock. However, they have few remaining bases mainly because they formed in parent material with a low base content. Formation under forest vegetation caused a rapid decay of organic matter and a constant recycling of plant nutrients, which have prevented the accumulation of large quantities of organic matter in the soils. Also, the present climate favors rapid decay of plant materials, oxidation of organic matter, and leaching of plant nutrients.

As farming developed in the survey area, human activities became an important factor in soil development. They included the clearing of forests, cultivation, the introduction of new plants, and changes in natural drainage. The most important human activities have been the mixing of the upper layers of the soil to form a plow layer; the cultivation of erodible, steep slopes; and liming and fertilizing that change the content of plant nutrients, especially in the upper layers of the soils.

Relief

The underlying formations, the geologic history of the general region, and the effects of dissection by rivers and streams largely determine the relief of an area. Relief affects soil formation by influencing the rate of surface runoff, the soil temperature, and geologic erosion. It can alter the effects of climate acting on parent material so that several different kinds of soil may form from the same kind of parent material. Relief also affects the absorption rate of radiant energy by soils and, in this way, it affects the type of native vegetation.

Relief in the survey area ranges from nearly level to very steep. Nearly level soils are commonly on upland flats or flood plains and terraces of streams. Most nearly level soils are wet because of a seasonal high water table, slow surface runoff, or flooding. These soils typically have a gray, poorly drained subsoil or substratum. They include Maurertown and Melvin soils.

Gently sloping to very steep soils generally are well drained or moderately well drained. Geologic erosion is slight, surface runoff is medium or rapid, and bases and clay generally have been translocated downward through the soil. On the steeper soils,

however, surface runoff is very rapid, water infiltration and translocation of clays and bases throughout the soil are reduced, and geologic erosion has removed soil materials.

Moderately well drained to poorly drained soils formed in the areas on uplands where natural stream dissection has not created outlets. In most of these areas, the parent material and other soil-forming factors are essentially the same and relief, or topography, has modified the effects of the other soil-forming factors. Maurertown and Shelocta soils, for example, formed in these areas. Maurertown soils are poorly drained and are in depressions on uplands. Shelocta soils are well drained and are on the higher parts of the landscape.

Drainage and texture are related to deposition. Thus, on nearly level flood plains, fine-grained, poorly drained Melvin soils formed in areas where slow-moving water deposited suspended sediments. Coarse-grained, well drained Derroc soils formed where fast-moving water deposited sand, gravel, and cobbles when streams overflowed their banks during flooding. Medium textured, moderately well drained Sindion soils and well drained Speedwell soils formed in material deposited on point bars.

Time

As a factor of soil formation, time generally is related to the degree of development or the degree of horizon differentiation within the soil. A soil that has little or no horizon development is considered a young soil, and a soil that has strongly developed horizons is considered an old, or mature, soil.

The oldest soils in the survey area formed in residuum derived from bedrock. Generally, these soils are in less sloping, relatively stable positions and formed in easily weatherable materials. They have a strong degree of horizon differentiation. They include Austinville and Frederick soils. On very steep slopes, geologic erosion has removed soil material in a relatively short period and the soils generally have not been in place long enough to develop more than moderate horizon differentiation. Examples of soils that formed on very steep slopes are Berks and Dekalb soils. Soils that formed in recent alluvium have been in place only a relatively short time and show little or no development other than accumulated organic matter in the surface layer. They commonly are stratified and have an irregular distribution of organic matter. They include Speedwell and Wolfgap soils.

Morphology of the Soils

The results of the interaction of the soil-forming factors can be distinguished by the different layers, or horizons, in a soil profile. The soil profile extends from the surface down to materials that are little altered by the soil-forming processes.

Most soils have three major horizons—the A, B, and C horizons. The major horizons may be further subdivided by the use of numbers and letters to indicate changes within one horizon. For example, the Bt horizon is a B horizon that has an accumulation of clay.

The A horizon, or the surface layer, contains accumulated organic matter. The E horizon, a subsurface layer, has the maximum amount of leaching of bases and eluviation of clay and iron.

The B horizon, or the subsoil, underlies an A or E horizon. It is the horizon of maximum accumulation of clay, iron, aluminum, or other compounds leached from the surface layer. In some soils it formed by alteration in place rather than by illuviation. The alteration can be caused by oxidation and reduction of iron or by weathering of clay minerals. The B horizon commonly has a blocky or prismatic structure. It generally is finer textured and lighter in color than the E horizon but darker than the C horizon.

The C horizon is below the B horizon or, in some instances, below the A horizon. It consists of materials little altered by the soil-forming processes.

Processes of Horizon Differentiation

In this survey area several processes are involved in the formation of soil horizons. Among these are accumulation of organic matter, leaching of soluble salts, reduction and transfer of iron, formation of soil structure, and formation and translocation of clay minerals. These processes continue, generally at the same time, throughout the soil profile. They have been going on for thousands of years.

The accumulation and incorporation of organic matter takes place with decomposition of plant residue. Organic matter darkens the surface layer and helps to form the A horizon. In many places much of the surface layer has been eroded away or has been mixed with materials from underlying layers through cultivation. Once lost, organic matter normally takes a long time to replace. In Smyth County, organic matter content of the surface layer is low in Berks soils and moderate in Wolfgap soils.

For soils to have a distinct subsoil horizon, some lime and soluble salts must be leached before the translocation of clay minerals. The factors that affect leaching include the kind of salts originally present, the depth to which the soil solution percolates, and the texture of the soil profile.

Well drained or moderately well drained soils in the survey area have a dark red to yellowish brown subsoil. These colors are caused mainly by thin coatings of iron oxides on the soil particles; however, in some soils the color is inherited from the materials in which they formed. The structure of the subsoil is, in most soils in the survey area, weak to moderate subangular blocky. The subsoil has more clay than the overlying surface horizon.

The reduction and transfer of iron, called gleying, is associated mainly with wetter, more poorly drained soils. For example, the moderately well drained Wheeling, Marbie, and Botetourt soils have yellowish brown to gray mottles that indicate segregation of iron. Also, the grayish subsoil and underlying material in the poorly drained Melvin and Maurertown soils indicate the reduction and transfer of iron removed in solution.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvial fan. A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl. A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction toward which a slope faces. Also called slope aspect.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp. A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology). A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane. A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. An informal term loosely applied to various portions of a flood plain.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between

particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. See Redoximorphic features.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A dense, compact, slowly permeable subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Concretions. See Redoximorphic features.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse-grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Crusts, soil. Relatively thin, somewhat continuous layers of the soil surface that often restrict water movement, air entry, and seedling emergence from the soil. They generally are less than 2 inches thick and are massive.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep soils, 20 to 40 inches; shallow soils, 10 to 20 inches; and very shallow soils, less than 10 inches.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw. A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Earthy fill. See Mine spoil.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response

to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion pavement. A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface. A land surface shaped by the action of erosion, especially by running water.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan (alluvial). A generic term for constructional landforms that are built of stratified alluvium with or without debris-flow deposits and that occur on the pediment slope, downslope from their source of alluvium.

Fan apron. A sheet-like mantle of relatively young alluvium or colluvium covering part of an older fan piedmont surface. It buries a soil that can be traced to the edge of the fan apron where the soil emerges as the land surface, or relict soil. No buried soils should occur within a fan-apron mantle.

Fan remnant. A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the

movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flooding frequency class. Flooding frequency class indicates the number of times flooding occurs over a period of time. The classes of flooding are defined as follows:

None.—There is no reasonable possibility of flooding. The chance of flooding is near 0 percent in any year or less than 1 time in 500 years.

Very rare.—Flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year or less than 1 time in 100 years but is at least 1 time in 500 years.

Rare.—Flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year or nearly 1 to 5 times in 100 years.

Occasional.—Flooding is expected infrequently under usual weather conditions. The chance of flooding is 5 to 50 percent in any year or more than 5 to 50 times in 100 years.

Frequent.—Flooding is likely to occur often under usual weather conditions. The chance of flooding is more than a 50 percent in any year or more than 50 times in 100 years, but there is a less than a 50 percent chance of flooding in all months in any year.

Very frequent.—Flooding is likely to occur very often under usual weather conditions. The chance of flooding is more than a 50 percent in all months of any year.

Flood plain. The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms. A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay. A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step. An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial. Of or pertaining to rivers or streams; produced by stream or river action.

Foothills. A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope. The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope. A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct

characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Karst (topography). A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Landslide. A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^{1}/_{3}$- or $^{1}/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Mass movement. A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses. See Redoximorphic features.

Meander belt. The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar. A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll. One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine spoil. An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. A kind of map unit that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain. A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Mudstone. A blocky or massive, fine-grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. See Redoximorphic features.

Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Paleoterrace. An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment. A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to

100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower-lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings. See Redoximorphic features.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features. The redoximorphic features are defined as follows:

1. *Redoximorphic concentrations.*—These are zones of apparent accumulation of iron-manganese oxides and include nodules and concretions, masses, and pore linings. *Nodules and concretions* are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure. *Masses* are noncemented concentrations of substances within the soil matrix. *Pore linings* are zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.

2. *Redoximorphic depletions.*—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out. They include iron depletions and clay depletions. *Iron depletions* are zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix. *Clay depletions* are zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).

3. *Reduced matrix.*—This is a soil matrix that has low chroma in situ but

undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saturated hydraulic conductivity (K_{sat}). The amount of water that would move vertically through a unit area of saturated soil in unit time under unit hydraulic gradient. Terms describing saturated hydraulic conductivity are measured in inches per hour, or *micrometers per second or µm/sec*. To convert µm/sec to in/hr multiply µm/sec by 0.1417; to convert in/hr to µm/sec multiply by 7.0572. Terms are as follows:

Very low	0.0 to 0.001417 in/hr *(0.0 to 0.01 µm/sec)*
Low	0.001417 to 0.01417 in/hr *(0.01 to 0.1 µm/sec)*
Moderately low	0.01417 to 0.1417 in/hr *(0.1 to 1.0 µm/sec)*
Moderately high	0.1417 to 1.417 in/hr *(1.0 to 10 µm/sec)*
High	1.417 to 14.17 in/hr *(10 to 100 µm/sec)*
Very high	more than 14.17 in/hr *(more than 100 µm/sec)*

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine

deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 7 percent
Strongly sloping	7 to 15 percent
Moderately steep	15 to 25 percent

Steep	25 to 35 percent
Very steep	35 percent and higher

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strath terrace. A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic*

(vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus. Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Terrace (conservation). An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion. Terraces susceptible to flooding are subdivided as follows:

Low stream terrace.—A terrace that is susceptible to flooding.

High stream terrace.—A terrace that is not susceptible to flooding.

Terracettes. Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The gently inclined surface at the base of a hillslope. Toeslopes in profile

are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread. The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill. The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1971-2000 at Burkes Garden, Virginia)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	Maximum temp. higher than--	Minimum temp. lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	39.3	20.2	29.8	62	-13	27	3.88	2.21	5.38	8	15.1
February-	42.7	22.1	32.4	67	-6	41	3.41	2.07	4.76	7	13.8
March----	51.5	29.5	40.5	74	6	130	4.11	2.51	5.77	8	8.1
April----	60.7	35.6	48.1	79	15	265	3.60	2.15	5.06	8	3.0
May------	68.6	44.5	56.6	81	24	508	4.89	3.35	6.35	10	0.1
June-----	75.2	52.6	63.9	85	34	713	4.26	2.64	5.71	8	0.0
July-----	78.8	56.6	67.7	88	40	847	4.38	2.68	6.05	8	0.0
August---	77.6	54.6	66.1	87	39	810	4.04	2.57	5.35	7	0.0
September	72.0	48.3	60.1	85	28	599	3.47	1.70	5.26	6	0.0
October--	62.4	36.6	49.5	77	17	305	3.11	1.43	4.71	5	0.4
November-	52.0	29.6	40.8	72	7	126	3.15	1.94	4.26	7	2.9
December-	43.0	23.0	33.0	65	-5	50	3.41	1.96	4.74	7	9.1
Yearly:											
Average	60.3	37.8	49.0	---	---	---	---	---	---	---	---
Extreme	94	-26	---	89	-16	---	---	---	---	---	---
Total--	---	---	---	---	---	4,421	45.71	39.41	51.52	89	52.5

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.—Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Burkes Garden, Virginia)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	May 3	May 14	June 3
2 years in 10 later than--	Apr. 27	May 10	May 27
5 years in 10 later than--	Apr. 15	May 3	May 16
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 4	Sept. 24	Sept. 10
2 years in 10 earlier than--	Oct. 8	Sept. 28	Sept. 15
5 years in 10 earlier than-	Oct. 17	Oct. 6	Sept. 26

Table 3.—Growing Season

(Recorded in the period 1971-2000 at Burkes Garden, Virginia)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	163	140	109
8 years in 10	170	145	118
5 years in 10	184	156	133
2 years in 10	198	167	148
1 year in 10	205	172	156

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
1B	Austinville silty clay loam, 2 to 7 percent slopes	43	*
1C	Austinville silty clay loam, 7 to 15 percent slopes	240	0.1
1D	Austinville silty clay loam, 15 to 25 percent slopes	337	0.2
1E	Austinville silty clay loam, 25 to 35 percent slopes	172	*
2E	Austinville-Rock outcrop complex, 10 to 45 percent slopes	365	0.2
3D	Berks-Weikert complex, 15 to 35 percent slopes	2,956	1.4
4B	Botetourt loam, 2 to 7 percent slopes, rarely flooded	785	0.4
4C	Botetourt loam, 7 to 15 percent slopes	303	0.1
5E	Brushy extremely gravelly loam, 25 to 65 percent slopes	2,846	1.3
6E	Calvin channery silt loam, 25 to 65 percent slopes	1,640	0.8
7C	Carbo silty clay loam, 7 to 15 percent slopes	1,062	0.5
7D	Carbo silty clay loam, 15 to 25 percent slopes	825	0.4
8D	Carbo-Rock outcrop complex, 7 to 25 percent slopes	4,110	1.9
8E	Carbo-Rock outcrop complex, 25 to 65 percent slopes	17,995	8.3
9E	Carbo-Rock outcrop complex, 7 to 65 percent slopes, karst	3,170	1.5
10C	Chiswell-Litz-Groseclose complex, 7 to 15 percent slopes	1,716	0.8
10D	Chiswell-Litz-Groseclose complex, 15 to 25 percent slopes	3,955	1.8
10E	Chiswell-Litz-Groseclose complex, 25 to 65 percent slopes	10,120	4.6
11D	Dekalb channery sandy loam, 15 to 25 percent slopes, extremely stony	341	0.2
11E	Dekalb channery sandy loam, 25 to 80 percent slopes, extremely stony	3,807	1.7
12B	Derroc cobbly sandy loam, 0 to 5 percent slopes, occasionally flooded	2,677	1.2
13D	Drypond-Rock outcrop complex, 15 to 35 percent slopes, extremely stony	669	0.3
13E	Drypond-Rock outcrop complex, 35 to 80 percent slopes, extremely stony	1,936	0.9
14	Dumps, mines	119	*
15B	Frederick silt loam, 2 to 7 percent slopes	363	0.2
15C	Frederick silt loam, 7 to 15 percent slopes	8,053	3.7
15D	Frederick silt loam, 15 to 25 percent slopes	9,459	4.3
15E	Frederick silt loam, 25 to 35 percent slopes	3,485	1.6
15F	Frederick silt loam, 35 to 60 percent slopes	3,800	1.7
16B	Frederick gravelly silt loam, 2 to 7 percent slopes	59	*
16C	Frederick gravelly silt loam, 7 to 15 percent slopes	4,010	1.8
16D	Frederick gravelly silt loam, 15 to 25 percent slopes	6,626	3.0
16E	Frederick gravelly silt loam, 25 to 35 percent slopes	3,834	1.8
17C	Frederick-Urban land complex, 0 to 15 percent slopes	2,149	1.0
18E	Greenlee very cobbly loam, 25 to 65 percent slopes, very stony	242	0.1
19B	Ingledove loam, 2 to 7 percent slopes, rarely flooded	435	0.2
20B	Ingledove-Urban land complex, 2 to 7 percent slopes, rarely flooded	112	*
21D	Konnarock very channery silt loam, 15 to 35 percent slopes	484	0.2
21E	Konnarock very channery silt loam, 35 to 65 percent slopes	1,448	0.7
22B	Laidig sandy loam, 2 to 7 percent slopes	710	0.3
22C	Laidig sandy loam, 7 to 15 percent slopes	1,100	0.5
22D	Laidig sandy loam, 15 to 25 percent slopes	190	*
23C	Laidig sandy loam, 7 to 15 percent slopes, very stony	656	0.3
23D	Laidig sandy loam, 15 to 25 percent slopes, very stony	1,269	0.6
24C	Lily sandy loam, 7 to 15 percent slopes, very stony	523	0.2
24D	Lily sandy loam, 15 to 25 percent slopes, very stony	3,649	1.7
24E	Lily sandy loam, 25 to 65 percent slopes, very stony	14,464	6.6
25A	Maurertown silt loam, 0 to 2 percent slopes, occasionally flooded	229	0.1
26A	Melvin silt loam, 0 to 2 percent slopes, frequently flooded	1,639	0.8
27D	Newbern-Westmoreland complex, 15 to 25 percent slopes	818	0.4
27E	Newbern-Westmoreland complex, 25 to 65 percent slopes	9,542	4.4
28	Pits, quarries	89	*
29C	Poynor very gravelly silt loam, 7 to 15 percent slopes	188	*
29D	Poynor very gravelly silt loam, 15 to 25 percent slopes	941	0.4
29E	Poynor very gravelly silt loam, 25 to 60 percent slopes	2,436	1.1
30F	Rock outcrop-Newbern complex, 25 to 99 percent slopes	311	0.1
31B	Shelocta silt loam, 2 to 7 percent slopes	733	0.3
31C	Shelocta silt loam, 7 to 15 percent slopes	2,556	1.2
31D	Shelocta silt loam, 15 to 25 percent slopes	870	0.4
31E	Shelocta silt loam, 25 to 45 percent slopes	125	*

See footnote at end of table.

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
32B	Shottower loam, 2 to 7 percent slopes	778	0.4
32C	Shottower loam, 7 to 15 percent slopes	1,843	0.8
32D	Shottower loam, 15 to 30 percent slopes	545	0.3
33A	Sindion silt loam, 0 to 2 percent slopes, occasionally flooded	1,692	0.8
34	Slickens	91	*
35A	Speedwell fine sandy loam, 0 to 2 percent slopes, occasionally flooded	1,054	0.5
36D	Sylco-Sylvatus complex, 15 to 35 percent slopes	313	0.1
36E	Sylco-Sylvatus complex, 35 to 70 percent slopes	2,506	1.2
37B	Tate loam, 2 to 7 percent slopes	514	0.2
38B	Timberville silt loam, 0 to 7 percent slopes, rarely flooded	572	0.3
39B	Tumbling loam, 2 to 7 percent slopes	1,178	0.5
39C	Tumbling loam, 7 to 15 percent slopes	4,942	2.3
39D	Tumbling loam, 15 to 25 percent slopes	1,774	0.8
39E	Tumbling loam, 25 to 35 percent slopes	552	0.3
40C	Tumbling loam, 7 to 15 percent slopes, very stony	2,557	1.2
40D	Tumbling loam, 15 to 25 percent slopes, very stony	4,008	1.8
40E	Tumbling loam, 25 to 65 percent slopes, very stony	1,633	0.8
41	Udorthents-Urban land complex, 0 to 25 percent slopes	1,143	0.5
42E	Weikert-Berks complex, 35 to 70 percent slopes	21,290	9.8
43B	Wheeling loam, 2 to 7 percent slopes, rarely flooded	2,021	0.9
44B	Wheeling-Urban land complex, 2 to 7 percent slopes, rarely flooded	1,088	0.5
45A	Wolfgap clay loam, 0 to 2 percent slopes, occasionally flooded	587	0.3
46C	Wurno-Newbern complex, 7 to 15 percent slopes	730	0.3
46D	Wurno-Newbern complex, 15 to 25 percent slopes	2,016	0.9
46E	Wurno-Newbern complex, 25 to 65 percent slopes	6,521	3.0
47B	Wyrick-Marbie complex, 2 to 7 percent slopes	1,573	0.7
47C	Wyrick-Marbie complex, 7 to 15 percent slopes	3,246	1.5
47D	Wyrick-Marbie complex, 15 to 25 percent slopes	288	0.1
W	Water	859	0.4
	Total	217,700	100.0

* Less than 0.1 percent.

Table 5.—Land Capability Class, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Land capability	Virginia Soil Management Group	Corn	Corn silage	Grass-legume hay	Pasture	Wheat
			Bu	Tons	Tons	AUM	Bu
1B:							
Austinville-------	2e	O	130	26.0	4.0	7.0	64
1C:							
Austinville-------	3e	O	114	23.0	3.5	6.0	56
1D:							
Austinville-------	4e	O	104	21.0	3.2	5.5	51
1E:							
Austinville-------	6e	O	---	---	---	4.5	---
2E:							
Austinville-------	7s	O	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
3D:							
Berks-------------	6e	JJ	---	---	---	3.0	---
Weikert-----------	6e	JJ	---	---	---	2.5	---
4B:							
Botetourt---------	2e	G	140	25.0	4.5	8.0	64
4C:							
Botetourt---------	3e	G	123	22.0	4.0	7.0	56
5E:							
Brushy------------	7e	JJ	---	---	---	---	---
6E:							
Calvin------------	7e	JJ	---	---	---	---	---
7C:							
Carbo-------------	3e	Y	88	16.0	3.1	4.5	42
7D:							
Carbo-------------	4e	Y	80	15.0	2.8	4.0	38
8D:							
Carbo-------------	7s	Y	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---
8E:							
Carbo-------------	7s	Y	---	---	---	---	---
Rock outcrop------	8s	---	---	---	---	---	---

Table 5.—Land Capability Class, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Corn	Corn silage	Grass-legume hay	Pasture	Wheat
			Bu	Tons	Tons	AUM	Bu
9E:							
Carbo	7s	Y	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---
10C:							
Chiswell	4s	JJ	57	10.0	2.6	3.0	35
Litz	3e	JJ	57	10.0	2.6	3.5	35
Groseclose	3e	M	114	20.0	3.5	6.5	56
10D:							
Chiswell	4e	JJ	52	9.0	2.4	2.5	32
Litz	4e	JJ	52	9.0	2.4	3.0	32
Groseclose	4e	M	104	19.0	3.2	6.0	51
10E:							
Chiswell	7e	JJ	---	---	---	---	---
Litz	7e	JJ	---	---	---	---	---
Groseclose	7e	M	---	---	---	---	---
11D:							
Dekalb	7s	FF	---	---	---	---	---
11E:							
Dekalb	7e	FF	---	---	---	---	---
12B:							
Derroc	2s	CC	72	13.0	3.0	4.0	48
13D:							
Drypond	7s	JJ	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---
13E:							
Drypond	7s	JJ	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---
14. Dumps, mine							
15B:							
Frederick	2e	M	130	26.0	4.0	8.3	64
15C:							
Frederick	3e	M	114	23.0	3.5	8.0	56
15D:							
Frederick	4e	M	104	21.0	3.2	7.7	51
15E:							
Frederick	6e	M	---	---	---	7.0	---

Table 5.—Land Capability Class, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Corn	Corn silage	Grass-legume hay	Pasture	Wheat
			Bu	Tons	Tons	AUM	Bu
15F:							
Frederick	7e	M	---	---	---	---	---
16B:							
Frederick	2e	M	117	23.0	3.6	7.5	58
16C:							
Frederick	3e	M	103	21.0	3.2	7.2	51
16D:							
Frederick	4e	M	94	19.0	2.9	7.0	46
16E:							
Frederick	6e	M	---	---	---	6.3	---
17C:							
Frederick	8s	M	---	---	---	---	---
Urban land	8s	---	---	---	---	---	---
18E:							
Greenlee	7s	CC	---	---	---	---	---
19B:							
Ingledove	2e	A	160	29.0	4.5	8.3	64
20B:							
Ingledove	8s	A	---	---	---	---	---
Urban land	8s	---	---	---	---	---	---
21D:							
Konnarock	7s	JJ	---	---	---	---	---
21E:							
Konnarock	7e	JJ	---	---	---	---	---
22B:							
Laidig	2e	W	100	20.0	3.0	4.5	40
22C:							
Laidig	3e	W	88	18.0	2.6	4.0	35
22D:							
Laidig	4e	W	80	15.0	2.4	3.5	32
23C:							
Laidig	6s	W	---	---	---	3.5	---
23D:							
Laidig	7s	W	---	---	---	---	---
24C:							
Lily	6s	U	---	---	---	4.5	---
24D:							
Lily	7s	U	---	---	---	---	---

Table 5.—Land Capability Class, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Corn	Corn silage	Grass-legume hay	Pasture	Wheat
			Bu	Tons	Tons	AUM	Bu
24E:							
Lily--------------	7e	U	---	---	---	---	---
25A:							
Maurertown--------	4w	NN	65	13.0	---	4.0	24
26A:							
Melvin------------	6w	NN	---	---	---	3.5	---
27D:							
Newbern-----------	4e	JJ	52	10.0	2.4	2.5	32
Westmoreland------	4e	U	88	17.0	2.8	4.0	45
27E:							
Newbern-----------	7e	JJ	---	---	---	---	---
Westmoreland------	7e	U	---	---	---	---	---
28.							
Pits, quarries							
29C:							
Poynor------------	4s	GG	56	10.0	2.3	4.0	26
29D:							
Poynor------------	6s	GG	---	---	---	3.7	---
29E:							
Poynor------------	7e	GG	---	---	---	---	---
30F:							
Rock outcrop------	8s	---	---	---	---	---	---
Newbern-----------	7s	JJ	---	---	---	---	---
31B:							
Shelocta----------	2e	L	130	24.0	4.0	8.0	64
31C:							
Shelocta----------	3e	L	114	21.0	3.5	7.5	56
31D:							
Shelocta----------	4e	L	104	19.0	3.2	6.0	51
31E:							
Shelocta----------	7e	L	---	---	---	---	---
32B:							
Shottower---------	2e	O	130	23.0	4.0	8.5	64
32C:							
Shottower---------	3e	O	114	21.0	3.5	8.0	56
32D:							
Shottower---------	4e	O	104	19.0	3.2	7.5	51
33A:							
Sindion-----------	2w	B	160	29.0	4.5	8.3	64

Table 5.—Land Capability Class, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Corn	Corn silage	Grass-legume hay	Pasture	Wheat
			Bu	Tons	Tons	AUM	Bu
34:							
Slickens----------	8s	---	---	---	---	---	---
35A:							
Speedwell---------	1	A	160	29.0	4.5	9.0	64
36D:							
Sylco-------------	6e	JJ	---	---	---	3.0	---
Sylvatus----------	6e	JJ	---	---	---	2.5	---
36E:							
Sylco-------------	7e	JJ	---	---	---	---	---
Sylvatus----------	7e	JJ	---	---	---	---	---
37B:							
Tate--------------	2e	O	130	23.0	4.0	7.0	64
38B:							
Timberville-------	2e	G	140	25.0	4.5	8.5	64
39B:							
Tumbling----------	2e	O	130	23.0	4.0	8.5	64
39C:							
Tumbling----------	3e	O	114	19.0	3.5	8.0	56
39D:							
Tumbling----------	4e	O	104	18.0	3.2	7.5	51
39E:							
Tumbling----------	6e	O	---	---	---	7.0	---
40C:							
Tumbling----------	6s	O	---	---	---	6.5	---
40D:							
Tumbling----------	7s	O	---	---	---	---	---
40E:							
Tumbling----------	7e	O	---	---	---	---	---
41.							
Udorthents-Urban land							
42E:							
Weikert-----------	7e	JJ	---	---	---	---	---
Berks-------------	7e	JJ	---	---	---	---	---
43B:							
Wheeling----------	2e	A	160	29.0	4.5	8.5	64
44B:							
Wheeling----------	8s	A	---	---	---	---	---
Urban land--------	8s	---	---	---	---	---	---

Table 5.—Land Capability Class, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Corn	Corn silage	Grass-legume hay	Pasture	Wheat
			Bu	Tons	Tons	AUM	Bu
45A:							
Wolfgap-----------	1	A	160	29.0	4.5	8.5	64
46C:							
Wurno-------------	3e	JJ	57	10.0	2.6	3.5	35
Newbern-----------	4s	JJ	57	10.0	2.6	3.0	35
46D:							
Wurno-------------	4e	JJ	52	9.0	2.4	3.0	32
Newbern-----------	4e	JJ	52	9.0	2.4	2.5	32
46E:							
Wurno-------------	7e	JJ	---	---	---	---	---
Newbern-----------	7e	JJ	---	---	---	---	---
47B:							
Wyrick------------	2e	G	140	24.0	4.5	8.0	64
Marbie------------	2e	W	100	17.0	3.0	4.0	40
47C:							
Wyrick------------	3e	G	123	21.0	4.0	7.5	56
Marbie------------	3e	W	88	15.0	2.6	3.5	35
47D:							
Wyrick------------	4e	G	112	19.0	3.6	6.5	51
Marbie------------	4e	W	80	14.0	2.4	3.0	32
W.							
Water							

Table 6.—Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland)

Map symbol	Map unit name
1B	Austinville silty clay loam, 2 to 7 percent slopes
4B	Botetourt loam, 2 to 7 percent slopes, rarely flooded
15B	Frederick silt loam, 2 to 7 percent slopes
16B	Frederick gravelly silt loam, 2 to 7 percent slopes
19B	Ingledove loam, 2 to 7 percent slopes, rarely flooded
22B	Laidig sandy loam, 2 to 7 percent slopes
31B	Shelocta silt loam, 2 to 7 percent slopes
32B	Shottower loam, 2 to 7 percent slopes
33A	Sindion silt loam, 0 to 2 percent slopes, occasionally flooded
35A	Speedwell fine sandy loam, 0 to 2 percent slopes, occasionally flooded
37B	Tate loam, 2 to 7 percent slopes
38B	Timberville silt loam, 0 to 7 percent slopes, rarely flooded
39B	Tumbling loam, 2 to 7 percent slopes
43B	Wheeling loam, 2 to 7 percent slopes, rarely flooded
45A	Wolfgap clay loam, 0 to 2 percent slopes, occasionally flooded
47B	Wyrick-Marbie complex, 2 to 7 percent slopes

Table 7.—Agricultural Waste Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
1B:					
Austinville	80	Somewhat limited		Very limited	
		Too acid	0.62	Too acid	1.00
1C:					
Austinville	80	Somewhat limited		Very limited	
		Too acid	0.62	Too acid	1.00
		Slope	0.37	Slope	0.37
1D:					
Austinville	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.62	Too acid	1.00
1E:					
Austinville	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.62	Too acid	1.00
2E:					
Austinville	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.62	Too acid	1.00
Rock outcrop	30	Not rated		Not rated	
3D:					
Berks	40	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Depth to bedrock	0.65	Droughty	1.00
Weikert	35	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
4B:					
Botetourt	75	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too acid	0.02	Flooding	0.40
				Too acid	0.07
4C:					
Botetourt	75	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.37	Slope	0.37
		Too acid	0.02	Too acid	0.07

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
5E:					
Brushy	75	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Too acid	0.89	Droughty	1.00
6E:					
Calvin	75	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.99	Slope	1.00
		Depth to bedrock	0.65	Too acid	1.00
7C:					
Carbo	75	Very limited		Very limited	
		Slow water movement	1.00	Low adsorption	1.00
		Droughty	0.99	Slow water movement	1.00
		Depth to bedrock	0.90	Droughty	0.99
7D:					
Carbo	75	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	1.00	Slope	1.00
		Droughty	0.99	Slow water movement	1.00
8D:					
Carbo	45	Very limited		Very limited	
		Slow water movement	1.00	Low adsorption	1.00
		Slope	1.00	Slow water movement	1.00
		Droughty	0.99	Slope	1.00
Rock outcrop	30	Not rated		Not rated	
8E:					
Carbo	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Slow water movement	1.00	Slope	1.00
		Droughty	0.99	Slow water movement	1.00
Rock outcrop	30	Not rated		Not rated	
9E:					
Carbo	45	Very limited		Very limited	
		Slow water movement	1.00	Low adsorption	1.00
		Slope	1.00	Slow water movement	1.00
		Droughty	0.99	Slope	1.00
Rock outcrop	30	Not rated		Not rated	
10C:					
Chiswell	30	Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00
		Runoff	0.40	Low adsorption	1.00

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
10C:					
Litz	25	Very limited		Very limited	
		Droughty	1.00	Low adsorption	1.00
		Depth to bedrock	0.90	Droughty	1.00
		Too acid	0.37	Too acid	0.96
Groseclose	20	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Slope	0.37	Too acid	0.77
		Too acid	0.22	Slope	0.37
10D:					
Chiswell	30	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
Litz	25	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Depth to bedrock	0.90	Droughty	1.00
Groseclose	20	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	1.00	Slow water movement	1.00
		Too acid	0.22	Too acid	0.77
10E:					
Chiswell	30	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
Litz	25	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Depth to bedrock	0.90	Droughty	1.00
Groseclose	20	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	1.00	Slow water movement	1.00
		Too acid	0.22	Too acid	0.77
11D:					
Dekalb	75	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Large stones content	1.00	Slope	1.00
		Droughty	1.00	Droughty	1.00
11E:					
Dekalb	75	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Large stones content	1.00	Slope	1.00
		Droughty	1.00	Droughty	1.00

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
12B:					
Derroc	80	Very limited		Very limited	
		Filtering capacity	0.99	Flooding	1.00
		Flooding	0.60	Filtering capacity	0.99
		Droughty	0.58	Droughty	0.58
13D:					
Drypond	45	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
Rock outcrop	30	Not rated		Not rated	
13E:					
Drypond	45	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
Rock outcrop	30	Not rated		Not rated	
14:					
Dumps, mines	100	Not rated		Not rated	
15B:					
Frederick	80	Somewhat limited		Somewhat limited	
		Too acid	0.05	Too acid	0.21
15C:					
Frederick	80	Somewhat limited		Somewhat limited	
		Slope	0.37	Slope	0.37
		Too acid	0.05	Too acid	0.21
15D:					
Frederick	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.05	Too acid	0.21
15E:					
Frederick	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.05	Too acid	0.21
15F:					
Frederick	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.05	Too acid	0.21
16B:					
Frederick	80	Somewhat limited		Somewhat limited	
		Too acid	0.05	Too acid	0.21
16C:					
Frederick	80	Somewhat limited		Somewhat limited	
		Slope	0.37	Slope	0.37
		Too acid	0.05	Too acid	0.21

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
16D:					
Frederick	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.05	Too acid	0.21
16E:					
Frederick	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.05	Too acid	0.21
17C:					
Frederick	50	Somewhat limited		Somewhat limited	
		Too acid	0.05	Too acid	0.21
		Slope	0.01	Slope	0.01
Urban land	30	Not rated		Not rated	
18E:					
Greenlee	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Cobble content	0.87	Too acid	0.96
		Large stones content	0.76	Cobble content	0.87
19B:					
Ingledove	80	Somewhat limited		Somewhat limited	
		Too acid	0.02	Flooding	0.40
				Too acid	0.07
20B:					
Ingledove	50	Somewhat limited		Somewhat limited	
		Too acid	0.02	Flooding	0.40
				Too acid	0.07
Urban land	30	Not rated		Not rated	
21D:					
Konnarock	75	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Depth to bedrock	0.71	Droughty	1.00
21E:					
Konnarock	75	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Depth to bedrock	0.71	Droughty	1.00
22B:					
Laidig	75	Somewhat limited		Very limited	
		Droughty	0.93	Too acid	1.00
		Too acid	0.89	Droughty	0.93
		Depth to saturated zone	0.86	Depth to saturated zone	0.86

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
22C:					
Laidig	75	Somewhat limited		Very limited	
		Droughty	0.93	Too acid	1.00
		Too acid	0.89	Droughty	0.93
		Depth to saturated zone	0.86	Depth to saturated zone	0.86
22D:					
Laidig	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Droughty	0.93	Too acid	1.00
		Too acid	0.89	Droughty	0.93
23C:					
Laidig	75	Somewhat limited		Very limited	
		Droughty	0.93	Too acid	1.00
		Too acid	0.89	Droughty	0.93
		Depth to saturated zone	0.86	Depth to saturated zone	0.86
23D:					
Laidig	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Droughty	0.93	Too acid	1.00
		Too acid	0.89	Droughty	0.93
24C:					
Lily	75	Somewhat limited		Very limited	
		Droughty	0.80	Low adsorption	1.00
		Too acid	0.73	Too acid	1.00
		Large stones content	0.47	Droughty	0.80
24D:					
Lily	75	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.80	Slope	1.00
		Too acid	0.73	Too acid	1.00
24E:					
Lily	75	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.80	Slope	1.00
		Too acid	0.73	Too acid	1.00
25A:					
Maurertown	75	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
26A:					
Melvin	75	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Flooding	1.00

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
27D:					
Newbern	40	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
Westmoreland	35	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.11	Slope	1.00
				Too acid	0.42
27E:					
Newbern	40	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
Westmoreland	35	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.11	Slope	1.00
				Too acid	0.42
28:					
Pits, quarries	100	Not rated		Not rated	
29C:					
Poynor	75	Somewhat limited		Very limited	
		Too acid	0.62	Too acid	1.00
		Slope	0.37	Slope	0.37
		Droughty	0.24	Droughty	0.24
29D:					
Poynor	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.62	Too acid	1.00
		Droughty	0.24	Droughty	0.24
29E:					
Poynor	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.62	Too acid	1.00
		Droughty	0.24	Droughty	0.24
30F:					
Rock outcrop	40	Not rated		Not rated	
Newbern	35	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
31B:					
Shelocta	75	Somewhat limited		Somewhat limited	
		Too acid	0.37	Too acid	0.96
31C:					
Shelocta	75	Somewhat limited		Somewhat limited	
		Too acid	0.37	Too acid	0.96
		Slope	0.37	Slope	0.37

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
31D:					
Shelocta	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.37	Too acid	0.96
31E:					
Shelocta	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.37	Too acid	0.96
32B:					
Shottower	80	Somewhat limited		Somewhat limited	
		Low adsorption	0.56	Too acid	0.21
		Too acid	0.05	Low adsorption	0.06
32C:					
Shottower	80	Somewhat limited		Somewhat limited	
		Low adsorption	0.56	Slope	0.37
		Slope	0.37	Too acid	0.21
		Too acid	0.05	Low adsorption	0.06
32D:					
Shottower	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Low adsorption	0.56	Too acid	0.21
		Too acid	0.05	Low adsorption	0.06
33A:					
Sindion	75	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	0.60	Flooding	1.00
34:					
Slickens	100	Not rated		Not rated	
35A:					
Speedwell	80	Very limited		Very limited	
		Filtering capacity	0.99	Flooding	1.00
		Flooding	0.60	Filtering capacity	0.99
36D:					
Sylco	40	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.91	Slope	1.00
		Too acid	0.73	Too acid	1.00
Sylvatus	35	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
36E:					
Sylco	40	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.91	Slope	1.00
		Too acid	0.73	Too acid	1.00

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
36E:					
Sylvatus------------	35	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
37B:					
Tate----------------	75	Somewhat limited		Somewhat limited	
		Too acid	0.37	Too acid	0.96
38B:					
Timberville---------	75	Not limited		Somewhat limited	
				Flooding	0.40
39B:					
Tumbling------------	75	Somewhat limited		Somewhat limited	
		Too acid	0.37	Too acid	0.96
		Low adsorption	0.15		
39C:					
Tumbling------------	75	Somewhat limited		Somewhat limited	
		Too acid	0.37	Too acid	0.96
		Slope	0.37	Slope	0.37
		Low adsorption	0.15		
39D:					
Tumbling------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.37	Too acid	0.96
		Low adsorption	0.15		
39E:					
Tumbling------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.37	Too acid	0.96
		Low adsorption	0.15		
40C:					
Tumbling------------	75	Somewhat limited		Somewhat limited	
		Large stones content	0.47	Too acid	0.96
		Too acid	0.37	Slope	0.37
		Slope	0.37		
40D:					
Tumbling------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	0.47	Too acid	0.96
		Too acid	0.37		
40E:					
Tumbling------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Large stones content	0.47	Too acid	0.96
		Too acid	0.37		

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
41:					
Udorthents----------	45	Not rated		Not rated	
Urban land----------	30	Not rated		Not rated	
42E:					
Weikert------------	40	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
Berks---------------	35	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Depth to bedrock	0.65	Droughty	1.00
43B:					
Wheeling-----------	75	Somewhat limited		Somewhat limited	
		Too acid	0.05	Flooding	0.40
				Too acid	0.21
44B:					
Wheeling-----------	50	Somewhat limited		Somewhat limited	
		Too acid	0.05	Flooding	0.40
				Too acid	0.21
Urban land----------	30	Not rated		Not rated	
45A:					
Wolfgap------------	75	Very limited		Very limited	
		Filtering capacity	0.99	Flooding	1.00
		Flooding	0.60	Filtering capacity	0.99
46C:					
Wurno--------------	45	Very limited		Very limited	
		Droughty	1.00	Low adsorption	1.00
		Depth to bedrock	0.54	Droughty	1.00
		Slope	0.37	Depth to bedrock	0.54
Newbern------------	30	Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00
		Slow water movement	0.89	Low adsorption	1.00
46D:					
Wurno--------------	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Depth to bedrock	0.54	Droughty	1.00
Newbern------------	30	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
46E:					
Wurno	45	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	1.00	Slope	1.00
		Depth to bedrock	0.54	Droughty	1.00
Newbern	30	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Droughty	1.00	Low adsorption	1.00
47B:					
Wyrick	40	Somewhat limited		Somewhat limited	
		Too acid	0.22	Too acid	0.77
Marbie	35	Very limited		Very limited	
		Dense layer	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to cemented pan	0.99
		Depth to cemented pan	0.99	Too acid	0.77
47C:					
Wyrick	40	Somewhat limited		Somewhat limited	
		Slope	0.37	Too acid	0.77
		Too acid	0.22	Slope	0.37
Marbie	35	Very limited		Very limited	
		Dense layer	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to cemented pan	0.99
		Depth to cemented pan	0.99	Too acid	0.77
47D:					
Wyrick	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.22	Too acid	0.77
Marbie	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Dense layer	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Depth to cemented pan	0.99
W:					
Water	100	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
1B:					
Austinville	80	Very limited		Very limited	
		Too acid	1.00	Seepage	1.00
		Too steep for surface application	0.32	Too acid	1.00
1C:					
Austinville	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	1.00	Too acid	1.00
		Too steep for sprinkler application	0.60	Too steep	0.94
1D:					
Austinville	80	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	1.00	Too acid	1.00
1E:					
Austinville	80	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	1.00	Too acid	1.00
2E:					
Austinville	45	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Too acid	1.00	Too acid	1.00
Rock outcrop	30	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
3D:					
Berks	40	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Droughty	1.00	Seepage	1.00
Weikert	35	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep	1.00
4B:					
Botetourt	75	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too steep for surface application	0.32	Seepage	1.00
		Too acid	0.07	Flooding	0.40
4C:					
Botetourt	75	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	0.60	Too steep	0.94
5E:					
Brushy	75	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Droughty	1.00	Seepage	1.00
6E:					
Calvin	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Too acid	1.00	Too steep	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
7C:					
Carbo	75	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Seepage	1.00
		Droughty	0.99	Too steep	0.94
7D:					
Carbo	75	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Slow water movement	1.00	Seepage	1.00
8D:					
Carbo	45	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
Rock outcrop	30	Not rated		Not rated	
8E:					
Carbo	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Slow water movement	1.00	Seepage	1.00
Rock outcrop	30	Not rated		Not rated	
9E:					
Carbo	45	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
Rock outcrop	30	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
10C:					
Chiswell-----------	30	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00
		Too steep for surface application	1.00	Too steep	0.94
Litz---------------	25	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Seepage	1.00
				Too acid	0.96
		Too acid	0.96		
Groseclose---------	20	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
				Too steep	0.94
		Too steep for surface application	1.00	Too acid	0.77
		Too acid	0.77		
10D:					
Chiswell-----------	30	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep	1.00
		Too steep for surface application	1.00	Seepage	1.00
Litz---------------	25	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
				Too steep	1.00
				Seepage	1.00
		Too steep for sprinkler application	1.00		
		Droughty	1.00		
Groseclose---------	20	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too steep	1.00
				Too acid	0.77
		Too steep for sprinkler application	1.00		
		Slow water movement	1.00		
10E:					
Chiswell-----------	30	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep	1.00
		Too steep for surface application	1.00	Seepage	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
10E:					
Litz	25	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Droughty	1.00	Seepage	1.00
Groseclose	20	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Slow water movement	1.00	Too acid	0.77
11D:					
Dekalb	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Droughty	1.00	Too steep	1.00
11E:					
Dekalb	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Depth to bedrock	1.00
		Droughty	1.00	Too steep	1.00
12B:					
Derroc	80	Very limited		Very limited	
		Filtering capacity	0.99	Flooding	1.00
		Flooding	0.60	Seepage	1.00
		Droughty	0.58	Cobble content	1.00
13D:					
Drypond	45	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep	1.00
Rock outcrop	30	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
13E:					
Drypond-------------	45	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep	1.00
Rock outcrop--------	30	Not rated		Not rated	
14:					
Dumps, mines--------	100	Not rated		Not rated	
15B:					
Frederick-----------	80	Somewhat limited		Very limited	
		Too steep for surface application	0.32	Seepage	1.00
				Too acid	0.21
		Too acid	0.21		
15C:					
Frederick-----------	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too steep	0.94
				Too acid	0.21
		Too steep for sprinkler application	0.60		
		Too acid	0.21		
15D:					
Frederick-----------	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too steep	1.00
				Too acid	0.21
		Too steep for sprinkler application	1.00		
		Too acid	0.21		
15E:					
Frederick-----------	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too steep	1.00
				Too acid	0.21
		Too steep for sprinkler application	1.00		
		Too acid	0.21		
15F:					
Frederick-----------	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too steep	1.00
				Too acid	0.21
		Too steep for sprinkler application	1.00		
		Too acid	0.21		

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
16B:					
Frederick	80	Somewhat limited		Very limited	
		Too steep for surface application	0.32	Seepage	1.00
		Too acid	0.21	Too acid	0.21
16C:					
Frederick	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	0.60	Too steep	0.94
		Too acid	0.21	Too acid	0.21
16D:					
Frederick	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Too acid	0.21	Too acid	0.21
16E:					
Frederick	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Too acid	0.21	Too acid	0.21
17C:					
Frederick	50	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.21	Too steep	0.22
		Too steep for sprinkler application	0.10	Too acid	0.21
Urban land	30	Not rated		Not rated	
18E:					
Greenlee	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Too acid	0.96	Cobble content	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
19B:					
Ingledove-----------	80	Somewhat limited		Very limited	
		Too steep for surface application	0.32	Seepage	1.00
				Flooding	0.40
				Too acid	0.07
		Too acid	0.07		
20B:					
Ingledove-----------	50	Somewhat limited		Very limited	
		Too steep for surface application	0.32	Seepage	1.00
				Flooding	0.40
				Too acid	0.07
		Too acid	0.07		
Urban land----------	30	Not rated		Not rated	
21D:					
Konnarock-----------	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Depth to bedrock	1.00
				Too steep	1.00
		Too steep for sprinkler application	1.00		
		Droughty	1.00		
21E:					
Konnarock-----------	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Depth to bedrock	1.00
				Too steep	1.00
		Too steep for sprinkler application	1.00		
		Droughty	1.00		
22B:					
Laidig--------------	75	Very limited		Very limited	
		Too acid	1.00	Seepage	1.00
		Droughty	0.93	Depth to cemented pan	1.00
		Depth to saturated zone	0.86	Too acid	1.00
22C:					
Laidig--------------	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Depth to cemented pan	1.00
		Too acid	1.00	Too acid	1.00
		Droughty	0.93		
22D:					
Laidig--------------	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Depth to cemented pan	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Too acid	1.00		

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
23C:					
Laidig	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Depth to cemented pan	1.00
		Too acid	1.00	Too acid	1.00
		Droughty	0.93		
23D:					
Laidig	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Depth to cemented pan	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Too acid	1.00		
24C:					
Lily	75	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
				Seepage	1.00
				Too acid	1.00
		Too acid	1.00		
		Droughty	0.80		
24D:					
Lily	75	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
				Too steep	1.00
				Seepage	1.00
		Too steep for sprinkler application	1.00		
		Too acid	1.00		
24E:					
Lily	75	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
				Too steep	1.00
				Seepage	1.00
		Too steep for sprinkler application	1.00		
		Too acid	1.00		
25A:					
Maurertown	75	Very limited		Very limited	
		Slow water movement	1.00	Flooding	1.00
				Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
26A:					
Melvin	75	Very limited		Very limited	
		Ponding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Ponding	1.00
				Depth to saturated zone	1.00
		Flooding	1.00		

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
27D:					
Newbern-------------	40	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep	1.00
		Too steep for surface application	1.00	Seepage	1.00
Westmoreland--------	35	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep	1.00
				Seepage	1.00
				Depth to bedrock	0.71
		Too steep for sprinkler application	1.00		
		Too acid	0.42		
27E:					
Newbern-------------	40	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep	1.00
		Too steep for surface application	1.00	Seepage	1.00
Westmoreland--------	35	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep	1.00
				Seepage	1.00
				Depth to bedrock	0.71
		Too steep for sprinkler application	1.00		
		Too acid	0.42		
28:					
Pits, quarries------	100	Not rated		Not rated	
29C:					
Poynor--------------	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too acid	1.00
				Too steep	0.94
		Too acid	1.00		
		Too steep for sprinkler application	0.60		
29D:					
Poynor--------------	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too steep	1.00
				Too acid	1.00
		Too steep for sprinkler application	1.00		
		Too acid	1.00		

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
29E:					
Poynor	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Too acid	1.00	Too acid	1.00
30F:					
Rock outcrop	40	Not rated		Not rated	
Newbern	35	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep	1.00
		Too steep for surface application	1.00	Seepage	1.00
31B:					
Shelocta	75	Somewhat limited		Very limited	
		Too acid	0.96	Seepage	1.00
		Too steep for surface application	0.32	Too acid	0.96
31C:					
Shelocta	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.96	Too acid	0.96
		Too steep for sprinkler application	0.60	Too steep	0.94
31D:					
Shelocta	75	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.96	Too acid	0.96
31E:					
Shelocta	75	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.96	Too acid	0.96

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
32B:					
Shottower	80	Somewhat limited		Very limited	
		Low adsorption	0.56	Seepage	1.00
		Too steep for surface application	0.32	Low adsorption	0.56
		Too acid	0.21	Too acid	0.21
32C:					
Shottower	80	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	0.60	Too steep	0.94
		Low adsorption	0.56	Low adsorption	0.56
32D:					
Shottower	80	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Low adsorption	0.56	Low adsorption	0.56
33A:					
Sindion	75	Very limited		Very limited	
		Depth to saturated zone	1.00	Flooding	1.00
		Flooding	0.60	Depth to saturated zone	1.00
				Seepage	1.00
34:					
Slickens	100	Not rated		Not rated	
35A:					
Speedwell	80	Very limited		Very limited	
		Filtering capacity	0.99	Flooding	1.00
		Flooding	0.60	Seepage	1.00
36D:					
Sylco	40	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Too acid	1.00	Seepage	1.00
Sylvatus	35	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep	1.00
		Too steep for surface application	1.00	Seepage	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
36E:					
Sylco	40	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
				Too steep	1.00
				Seepage	1.00
		Too steep for sprinkler application	1.00		
		Too acid	1.00		
Sylvatus	35	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep	1.00
		Too steep for surface application	1.00	Seepage	1.00
37B:					
Tate	75	Somewhat limited		Very limited	
		Too acid	0.96	Seepage	1.00
		Too steep for surface application	0.32	Too acid	0.96
38B:					
Timberville	75	Somewhat limited		Very limited	
		Too steep for surface application	0.08	Seepage	1.00
				Flooding	0.40
39B:					
Tumbling	75	Somewhat limited		Very limited	
		Too acid	0.96	Seepage	1.00
		Too steep for surface application	0.32	Too acid	0.96
				Low adsorption	0.15
		Low adsorption	0.15		
39C:					
Tumbling	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too acid	0.96
				Too steep	0.94
		Too acid	0.96		
		Too steep for sprinkler application	0.60		
39D:					
Tumbling	75	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep	1.00
				Seepage	1.00
				Too acid	0.96
		Too steep for sprinkler application	1.00		
		Too acid	0.96		

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
39E:					
Tumbling	75	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep	1.00
				Seepage	1.00
				Too acid	0.96
		Too steep for sprinkler application	1.00		
		Too acid	0.96		
40C:					
Tumbling	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
				Too acid	0.96
				Too steep	0.94
		Too acid	0.96		
		Too steep for sprinkler application	0.60		
40D:					
Tumbling	75	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep	1.00
				Seepage	1.00
				Too acid	0.96
		Too steep for sprinkler application	1.00		
		Too acid	0.96		
40E:					
Tumbling	75	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep	1.00
				Seepage	1.00
				Too acid	0.96
		Too steep for sprinkler application	1.00		
		Too acid	0.96		
41:					
Udorthents	45	Not rated		Not rated	
Urban land	30	Not rated		Not rated	
42E:					
Weikert	40	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Too steep	1.00
Berks	35	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
				Too steep	1.00
				Seepage	1.00
		Too steep for sprinkler application	1.00		
		Droughty	1.00		

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
43B:					
Wheeling	75	Somewhat limited		Very limited	
		Too steep for surface application	0.32	Seepage	1.00
				Flooding	0.40
				Too acid	0.21
		Too acid	0.21		
44B:					
Wheeling	50	Somewhat limited		Very limited	
		Too steep for surface application	0.32	Seepage	1.00
				Flooding	0.40
				Too acid	0.21
		Too acid	0.21		
Urban land	30	Not rated		Not rated	
45A:					
Wolfgap	75	Very limited		Very limited	
		Filtering capacity	0.99	Flooding	1.00
				Seepage	1.00
		Flooding	0.60		
46C:					
Wurno	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
				Seepage	1.00
				Too steep	0.94
		Droughty	1.00		
		Too steep for sprinkler application	0.60		
Newbern	30	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00
		Too steep for surface application	1.00	Too steep	0.94
46D:					
Wurno	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
				Too steep	1.00
				Seepage	1.00
		Too steep for sprinkler application	1.00		
		Droughty	1.00		
Newbern	30	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep	1.00
		Too steep for surface application	1.00	Seepage	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
46E:					
Wurno	45	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep	1.00
		Droughty	1.00	Seepage	1.00
Newbern	30	Very limited		Very limited	
		Droughty	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep	1.00
		Too steep for surface application	1.00	Seepage	1.00
47B:					
Wyrick	40	Somewhat limited		Very limited	
		Too acid	0.77	Seepage	1.00
		Too steep for surface application	0.32	Too acid	0.77
Marbie	35	Very limited		Very limited	
		Depth to saturated zone	0.99	Depth to cemented pan	1.00
		Depth to cemented pan	0.99	Seepage	1.00
		Too acid	0.77	Depth to saturated zone	0.99
47C:					
Wyrick	40	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.77	Too steep	0.94
		Too steep for sprinkler application	0.60	Too acid	0.77
Marbie	35	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	0.99	Seepage	1.00
		Depth to cemented pan	0.99	Depth to saturated zone	0.99
47D:					
Wyrick	40	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.77	Too acid	0.77

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
47D:					
Marbie	35	Very limited		Very limited	
		Too steep for surface application	1.00	Depth to cemented pan	1.00
				Too steep	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Depth to saturated zone	0.99		
W:					
Water	100	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part III

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
1B:					
Austinville---------	80	Very limited		Very limited	
		Slow water movement	1.00	Too acid	1.00
				Too steep for surface application	0.32
		Slope	0.12		
		Too acid	0.03		
1C:					
Austinville---------	80	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00		
		Too acid	0.03	Too acid	1.00
				Too steep	0.94
1D:					
Austinville---------	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep	1.00
			0.03	Too acid	1.00
1E:					
Austinville---------	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep	1.00
				Too acid	1.00
2E:					
Austinville---------	45	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00		
		Too acid	0.03	Too steep	1.00
				Too acid	1.00
Rock outcrop--------	30	Not rated		Not rated	
3D:					
Berks---------------	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62		
				Too steep	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
3D:					
Weikert	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep	1.00
4B:					
Botetourt	75	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Too steep for surface application	0.32
		Slope	0.12	Too acid	0.07
4C:					
Botetourt	75	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep	0.94
5E:					
Brushy	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
6E:					
Calvin	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep	1.00
7C:					
Carbo	75	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slope	1.00	Slow water movement	0.96
7D:					
Carbo	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
8D:					
Carbo	45	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep	1.00
Rock outcrop	30	Not rated		Not rated	
8E:					
Carbo	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep	1.00
Rock outcrop	30	Not rated		Not rated	
9E:					
Carbo	45	Very limited		Very limited	
		Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep	1.00
Rock outcrop	30	Not rated		Not rated	
10C:					
Chiswell	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep	0.94
Litz	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too acid	0.96
Groseclose	20	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Slow water movement	0.96
				Too steep	0.94
10D:					
Chiswell	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
10D:					
Litz	25	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
Groseclose	20	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
				Slow water movement	0.96
10E:					
Chiswell	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
Litz	25	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
Groseclose	20	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
				Slow water movement	0.96
11D:					
Dekalb	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.45	Too steep	1.00
11E:					
Dekalb	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.45	Too steep	1.00
12B:					
Derroc	80	Very limited		Very limited	
		Cobble content	1.00	Filtering capacity	0.99
		Flooding	0.60	Flooding	0.60
				Cobble content	0.40

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
13D:					
Drypond------------	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too acid	0.14	Too steep	1.00
Rock outcrop--------	30	Not rated		Not rated	
13E:					
Drypond------------	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Too acid	0.14	Too steep	1.00
Rock outcrop--------	30	Not rated		Not rated	
14:					
Dumps, mines--------	100	Not rated		Not rated	
15B:					
Frederick-----------	80	Very limited		Somewhat limited	
		Slow water movement	1.00	Too steep for surface application	0.32
		Slope	0.12	Too acid	0.21
15C:					
Frederick-----------	80	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep	0.94
				Too acid	0.21
15D:					
Frederick-----------	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
				Too acid	0.21
15E:					
Frederick-----------	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
				Too acid	0.21
15F:					
Frederick-----------	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
				Too acid	0.21

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
16B:					
Frederick-----------	80	Very limited		Somewhat limited	
		Slow water movement	1.00	Too steep for surface application	0.32
		Slope	0.12	Too acid	0.21
16C:					
Frederick-----------	80	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep	0.94
				Too acid	0.21
16D:					
Frederick-----------	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
				Too acid	0.21
16E:					
Frederick-----------	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
				Too acid	0.21
17C:					
Frederick-----------	50	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep	0.22
				Too acid	0.21
Urban land----------	30	Not rated		Not rated	
18E:					
Greenlee------------	75	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Too steep	1.00
		Slow water movement	0.32	Too acid	0.96
19B:					
Ingledove-----------	80	Very limited		Somewhat limited	
		Slow water movement	1.00	Too steep for surface application	0.32
		Slope	0.12	Too acid	0.07

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
20B:					
Ingledove-----------	50	Very limited		Somewhat limited	
		Slow water movement	1.00	Too steep for surface application	0.32
		Slope	0.12	Too acid	0.07
Urban land----------	30	Not rated		Not rated	
21D:					
Konnarock-----------	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.65	Too steep	1.00
21E:					
Konnarock-----------	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Cobble content	0.65	Too steep	1.00
22B:					
Laidig--------------	75	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	0.86	Too acid	1.00
		Slow water movement	0.62	Depth to saturated zone	0.86
22C:					
Laidig--------------	75	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slope	1.00	Too steep for surface application	1.00
		Depth to saturated zone	0.86	Too acid	1.00
22D:					
Laidig--------------	75	Very limited		Very limited	
		Slope	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Too steep for surface application	1.00
		Depth to saturated zone	0.86	Too steep	1.00
23C:					
Laidig--------------	75	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slope	1.00	Too steep for surface application	1.00
		Depth to saturated zone	0.86	Too acid	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
23D:					
Laidig	75	Very limited		Very limited	
		Slope	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Too steep for surface application	1.00
		Depth to saturated zone	0.86	Too steep	1.00
24C:					
Lily	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too acid	1.00
24D:					
Lily	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep	1.00
24E:					
Lily	75	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep	1.00
25A:					
Maurertown	75	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slow water movement	1.00
26A:					
Melvin	75	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Flooding	1.00
27D:					
Newbern	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
27D:					
Westmoreland--------	35	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep	1.00
		Slow water movement	1.00	Depth to bedrock	0.71
27E:					
Newbern-------------	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
Westmoreland--------	35	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep	1.00
		Slow water movement	1.00	Depth to bedrock	0.71
			1.00		
28:					
Pits, quarries------	100	Not rated		Not rated	
29C:					
Poynor--------------	75	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too acid	1.00
		Too acid	0.03	Too steep	0.94
29D:					
Poynor--------------	75	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
		Too acid	0.03	Too acid	1.00
29E:					
Poynor--------------	75	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
		Too acid	0.03	Too acid	1.00
30F:					
Rock outcrop--------	40	Not rated		Not rated	
Newbern-------------	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
31B:					
Shelocta	75	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.96
		Slope	0.12	Too steep for surface application	0.32
31C:					
Shelocta	75	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too acid	0.96
				Too steep	0.94
31D:					
Shelocta	75	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
				Too acid	0.96
31E:					
Shelocta	75	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
				Too acid	0.96
32B:					
Shottower	80	Very limited		Somewhat limited	
		Slow water movement	1.00	Low adsorption	0.56
		Slope	0.12	Too steep for surface application	0.32
				Too acid	0.21
32C:					
Shottower	80	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep	0.94
				Low adsorption	0.56
32D:					
Shottower	80	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
				Low adsorption	0.56

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
33A:					
Sindion	75	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Flooding	0.60
		Flooding	0.60		
34:					
Slickens	100	Not rated		Not rated	
35A:					
Speedwell	80	Very limited		Very limited	
		Slow water movement	1.00	Filtering capacity	0.99
		Flooding	0.60	Flooding	0.60
36D:					
Sylco	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
Sylvatus	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
36E:					
Sylco	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
Sylvatus	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
37B:					
Tate	75	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.96
		Slope	0.12	Too steep for surface application	0.32
38B:					
Timberville	75	Very limited		Somewhat limited	
		Slow water movement	1.00	Too steep for surface application	0.08

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
39B:					
Tumbling-----------	75	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.96
		Slope	0.12	Too steep for surface application	0.32
		Too acid	0.03	Low adsorption	0.15
39C:					
Tumbling-----------	75	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too acid	0.96
		Too acid	0.03	Too steep	0.94
39D:					
Tumbling-----------	75	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
		Too acid	0.03	Too acid	0.96
39E:					
Tumbling-----------	75	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
		Too acid	0.03	Too acid	0.96
40C:					
Tumbling-----------	75	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too acid	0.96
		Too acid	0.03	Too steep	0.94
40D:					
Tumbling-----------	75	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
		Too acid	0.03	Too acid	0.96
40E:					
Tumbling-----------	75	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
		Too acid	0.03	Too acid	0.96
41:					
Udorthents----------	45	Not rated		Not rated	
Urban land----------	30	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
42E:					
Weikert	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep	1.00
Berks	35	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.62	Too steep	1.00
43B:					
Wheeling	75	Very limited		Somewhat limited	
		Slow water movement	1.00	Too steep for surface application	0.32
		Slope	0.12	Too acid	0.21
44B:					
Wheeling	50	Very limited		Somewhat limited	
		Slow water movement	1.00	Too steep for surface application	0.32
		Slope	0.12	Too acid	0.21
Urban land	30	Not rated		Not rated	
45A:					
Wolfgap	75	Very limited		Very limited	
		Slow water movement	1.00	Filtering capacity	0.99
		Flooding	0.60	Flooding	0.60
46C:					
Wurno	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep	0.94
Newbern	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep	0.94
46D:					
Wurno	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
46D:					
Newbern	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
46E:					
Wurno	45	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
Newbern	30	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
47B:					
Wyrick	40	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.77
		Too acid	0.14	Too steep for surface application	0.32
		Slope	0.12		
Marbie	35	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slow water movement	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Too acid	0.77
47C:					
Wyrick	40	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep	0.94
		Too acid	0.14	Too acid	0.77
Marbie	35	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Depth to saturated zone	0.99

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
47D:					
Wyrick	40	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
		Too acid	0.14	Too acid	0.77
Marbie	35	Very limited		Very limited	
		Slope	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep	1.00
W:					
Water	100	Not rated		Not rated	

Table 8.—Forestland Productivity

(Absence of an entry indicates information was not available)

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
1B:				
Austinville	northern red oak	78	57	northern red oak, yellow-poplar, white oak
	Virginia pine	81	129	
	white oak	76	57	
	yellow-poplar	100	114	
1C:				
Austinville	northern red oak	78	57	northern red oak, yellow-poplar, white oak
	Virginia pine	81	129	
	white oak	76	57	
	yellow-poplar	100	114	
1D:				
Austinville	northern red oak	78	57	northern red oak, yellow-poplar, white oak
	Virginia pine	81	129	
	white oak	76	57	
	yellow-poplar	100	114	
1E:				
Austinville	northern red oak	78	57	northern red oak, yellow-poplar, white oak
	Virginia pine	81	129	
	white oak	76	57	
	yellow-poplar	100	114	
2E:				
Austinville	northern red oak	78	57	northern red oak, yellow-poplar, white oak
	Virginia pine	81	129	
	white oak	76	57	
	yellow-poplar	100	114	
Rock outcrop.				
3D:				
Berks	Virginia pine	60	90	chestnut oak, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Weikert	chestnut oak	50	35	chestnut oak, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	50	35	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	pitch pine	50	---	
	shortleaf pine	50	---	
4B:				
Botetourt	yellow-poplar	115	130	black walnut, white ash, yellow-poplar
	black walnut	80	62	
	red maple	70	---	
4C:				
Botetourt	yellow-poplar	115	130	black walnut, white ash, yellow-poplar
	black walnut	80	62	
	red maple	70	---	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
5E:				
Brushy	northern red oak	60	43	northern red oak, yellow-poplar
	yellow-poplar	70	53	
6E:				
Calvin	northern red oak	65	47	northern red oak, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
7C:				
Carbo	northern red oak	65	47	northern red oak, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	yellow-poplar	80	70	
7D:				
Carbo	northern red oak	65	47	northern red oak, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	yellow-poplar	80	70	
8D:				
Carbo	northern red oak	65	47	northern red oak, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	yellow-poplar	80	70	
Rock outcrop.				
8E:				
Carbo	northern red oak	65	47	northern red oak, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	yellow-poplar	80	70	
Rock outcrop.				
9E:				
Carbo	northern red oak	65	47	northern red oak, black oak, white oak, yellow-poplar
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
	yellow-poplar	80	70	
Rock outcrop.				
10C:				
Chiswell	chestnut oak	50	35	chestnut oak, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	50	35	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	pitch pine	50	---	
	shortleaf pine	50	---	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
10C:				
Litz	northern red oak	65	47	northern red oak, chestnut oak, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Groseclose	eastern white pine	90	172	eastern white pine, northern red oak, yellow-poplar, white oak
	northern red oak	85	72	
	white oak	85	72	
	yellow-poplar	86	86	
10D:				
Chiswell	chestnut oak	50	35	chestnut oak, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	50	35	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	pitch pine	50	---	
	shortleaf pine	50	---	
Litz	northern red oak	65	47	northern red oak, chestnut oak, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Groseclose	eastern white pine	90	172	eastern white pine, northern red oak, yellow-poplar, white oak
	northern red oak	85	72	
	white oak	85	72	
	yellow-poplar	86	86	
10E:				
Chiswell	chestnut oak	50	35	chestnut oak, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	50	35	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	pitch pine	50	---	
	shortleaf pine	50	---	
Litz	northern red oak	65	47	northern red oak, chestnut oak, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
Groseclose	eastern white pine	90	172	eastern white pine, northern red oak, yellow-poplar, white oak
	northern red oak	85	72	
	white oak	85	72	
	yellow-poplar	86	86	
11D:				
Dekalb	chestnut oak	55	39	chestnut oak, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	55	39	
	black oak	55	39	
	white oak	55	39	
	Virginia pine	55	---	
	pitch pine	55	---	
	shortleaf pine	55	---	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
11E:				
Dekalb	chestnut oak	55	39	chestnut oak, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	55	39	
	black oak	55	39	
	white oak	55	39	
	Virginia pine	55	---	
	pitch pine	55	---	
	shortleaf pine	55	---	
12B:				
Derroc	yellow-poplar	90	90	walnut, yellow-poplar
	black walnut	75	53	
	red maple	65	---	
13D:				
Drypond	chestnut oak	50	35	chestnut oak, black oak, white oak, shortleaf pine, Table Mountain pine
	scarlet oak	45	30	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	shortleaf pine	50	---	
	Table Mountain pine	50	---	
Rock outcrop.				
13E:				
Drypond	chestnut oak	50	35	chestnut oak, black oak, white oak, shortleaf pine, Table Mountain pine
	scarlet oak	45	30	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	shortleaf pine	50	---	
	Table Mountain pine	50	---	
Rock outcrop.				
14. Dumps, mines				
15B:				
Frederick	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
15C:				
Frederick	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
15D:				
Frederick	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
15E:				
Frederick	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
15F:				
Frederick	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
16B:				
Frederick	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
16C:				
Frederick	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
16D:				
Frederick	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
16E:				
Frederick	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
17C:				
Frederick	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
Urban land.				
18E:				
Greenlee	eastern white pine	83	157	eastern white pine, northern red oak, yellow-poplar
	northern red oak	65	0	
	scarlet oak	55	43	
	Virginia pine	69	114	
	yellow-poplar	110	129	
19B:				
Ingledove	yellow-poplar	115	130	white ash, walnut, yellow-poplar
	walnut	80	62	
	white ash	95	---	
	red maple	70	---	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
20B:				
Ingledove	yellow-poplar	115	130	white ash, walnut, yellow-poplar
	walnut	80	62	
	white ash	95	---	
	red maple	70	---	
Urban land.				
21D:				
Konnarock	northern red oak	75	57	northern red oak, black oak, white oak, yellow-poplar
	hickory	65	---	
	black oak	70	52	
	white oak	70	52	
	yellow-poplar	80	70	
21E:				
Konnarock	northern red oak	75	57	northern red oak, black oak, white oak, yellow-poplar
	hickory	65	---	
	black oak	70	52	
	white oak	70	52	
	yellow-poplar	80	70	
22B:				
Laidig	eastern white pine	80	143	eastern white pine, northern red oak, yellow-poplar
	northern red oak	71	57	
	Virginia pine	70	114	
	yellow-poplar	89	86	
22C:				
Laidig	eastern white pine	80	143	eastern white pine, northern red oak, yellow-poplar
	northern red oak	71	57	
	Virginia pine	70	114	
	yellow-poplar	89	86	
22D:				
Laidig	eastern white pine	90	172	eastern white pine, northern red oak, yellow-poplar
	northern red oak	80	57	
	white ash	80	57	
	yellow-poplar	90	86	
23C:				
Laidig	black cherry	80	57	eastern white pine, northern red oak, yellow-poplar, white oak
	eastern white pine	90	172	
	northern red oak	80	57	
	sugar maple	80	57	
	white ash	80	57	
	white oak	80	57	
	yellow-poplar	90	86	
23D:				
Laidig	black cherry	80	57	eastern white pine, northern red oak, yellow-poplar, white oak
	eastern white pine	90	172	
	northern red oak	80	57	
	sugar maple	80	57	
	white ash	80	57	
	white oak	80	57	
	yellow-poplar	90	86	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
24C:				
Lily	northern red oak	65	47	northern red oak, chestnut oak, white oak, black oak
	chestnut oak	60	43	
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
24D:				
Lily	northern red oak	65	47	northern red oak, chestnut oak, white oak, black oak
	chestnut oak	60	43	
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
24E:				
Lily	northern red oak	65	47	northern red oak, chestnut oak, white oak, black oak
	chestnut oak	60	43	
	black oak	60	43	
	white oak	60	43	
	hickory	55	---	
25A:				
Maurertown	red maple	80	---	swamp white oak, sweetgum
	sweetgum	95	114	
	water oak	75	---	
26A:				
Melvin	eastern cottonwood	101	129	pin oak, willow oak, swamp white oak, sweetgum
	pin oak	99	100	
	red maple	80	---	
	sweetgum	89	100	
27D:				
Newbern	scarlet oak	55	39	Virginia pine
	Virginia pine	55	79	
Westmoreland	northern red oak	65	47	northern red oak, chestnut oak, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
27E:				
Newbern	scarlet oak	55	39	Virginia pine
	Virginia pine	55	79	
Westmoreland	northern red oak	65	47	northern red oak, chestnut oak, black oak, white oak
	black oak	60	43	
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
28.				
Pits, quarries				
29C:				
Poynor	black oak	53	43	black oak, white oak
	shortleaf pine	55	43	
	white oak	48	29	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
29D:				
Poynor	black oak	53	43	black oak, white oak
	shortleaf pine	55	43	
	white oak	48	29	
29E:				
Poynor	black oak	53	43	black oak, white oak
	shortleaf pine	55	43	
	white oak	48	29	
30F:				
Rock outcrop.				
Newbern	scarlet oak	65	43	---
	Virginia pine	65	100	
31B:				
Shelocta	northern red oak	80	62	northern red oak, white oak, yellow-poplar
	red maple	65	41	
	sugar maple	65	---	
	white oak	75	57	
	yellow-poplar	95	98	
31C:				
Shelocta	northern red oak	80	62	northern red oak, white oak, yellow-poplar
	red maple	65	41	
	sugar maple	65	---	
	white oak	75	57	
	yellow-poplar	95	98	
31D:				
Shelocta	northern red oak	80	62	northern red oak, white oak, yellow-poplar
	red maple	65	41	
	sugar maple	65	---	
	white oak	75	57	
	yellow-poplar	95	98	
31E:				
Shelocta	northern red oak	80	62	northern red oak, white oak, yellow-poplar
	red maple	65	41	
	sugar maple	65	---	
	white oak	75	57	
	yellow-poplar	95	98	
32B:				
Shottower	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
32C:				
Shottower	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
32D:				
Shottower	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
33A:				
Sindion	yellow-poplar	95	98	walnut, yellow-poplar
	black walnut	80	62	
	red maple	70	---	
34. Slickens				
35A:				
Speedwell	yellow-poplar	95	98	walnut, yellow-poplar
	black walnut	80	62	
	red maple	70	---	
36D:				
Sylco	black oak	60	---	black oak, eastern white pine, Virginia pine
	eastern white pine	75	131	
	shortleaf pine	60	86	
	Virginia pine	60	91	
	chestnut oak	60	43	
Sylvatus	black oak	55	---	black oak, eastern white pine, Virginia pine
	eastern white pine	70	120	
	Virginia pine	55	79	
	chestnut oak	50	35	
	scarlet oak	50	35	
36E:				
Sylco	black oak	60	---	black oak, eastern white pine, Virginia pine
	eastern white pine	75	131	
	shortleaf pine	60	86	
	Virginia pine	60	91	
	chestnut oak	60	43	
Sylvatus	black oak	55	---	black oak, eastern white pine, Virginia pine
	eastern white pine	70	120	
	Virginia pine	55	79	
	chestnut oak	50	35	
	scarlet oak	50	35	
37B:				
Tate	northern red oak	75	57	northern red oak, eastern white pine, yellow-poplar
	red maple	70	---	
	sugar maple	70	---	
	yellow-poplar	100	107	
	eastern white pine	100	191	
38B:				
Timberville	northern red oak	90	70	northern red oak, black walnut, white oak, yellow-poplar
	white oak	85	65	
	red maple	65	---	
	sugar maple	65	41	
	yellow-poplar	95	98	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
39B:				
Tumbling	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
39C:				
Tumbling	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
39D:				
Tumbling	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
39E:				
Tumbling	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
40C:				
Tumbling	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
40D:				
Tumbling	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
40E:				
Tumbling	northern red oak	75	57	northern red oak, white oak, yellow-poplar
	red maple	65	---	
	sugar maple	65	41	
	white oak	70	52	
	yellow-poplar	90	90	
41.				
Udorthents-Urban land				
42E:				
Weikert	chestnut oak	50	35	chestnut oak, black oak, white oak, pitch pine, shortleaf pine
	scarlet oak	50	35	
	black oak	50	35	
	white oak	50	35	
	Virginia pine	50	---	
	pitch pine	50	---	
	shortleaf pine	50	---	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
42E:				
Berks	black oak	60	43	chestnut oak, black oak, white oak
	white oak	60	43	
	chestnut oak	60	43	
	hickory	55	---	
43B:				
Wheeling	yellow-poplar	115	130	white ash, walnut, yellow-poplar
	walnut	80	62	
	white ash	95	---	
	red maple	75	---	
44B:				
Wheeling	yellow-poplar	115	130	white ash, walnut, yellow-poplar
	walnut	80	62	
	white ash	95	---	
	red maple	75	---	
Urban land.				
45A:				
Wolfgap	yellow-poplar	95	98	walnut, yellow-poplar
	black walnut	80	62	
	red maple	70	---	
46C:				
Wurno	northern red oak	65	47	black oak, northern red oak, white oak
	chestnut oak	65	47	
	black oak	65	47	
	white oak	65	47	
	hickory	60	---	
Newbern	scarlet oak	55	39	Virginia pine
	Virginia pine	55	79	
46D:				
Wurno	northern red oak	65	47	black oak, northern red oak, white oak
	chestnut oak	65	47	
	black oak	65	47	
	white oak	65	47	
	hickory	60	---	
Newbern	scarlet oak	55	39	Virginia pine
	Virginia pine	55	79	
46E:				
Wurno	northern red oak	65	47	black oak, northern red oak, white oak
	chestnut oak	65	47	
	black oak	65	47	
	white oak	65	47	
	hickory	60	---	
Newbern	scarlet oak	55	39	Virginia pine
	Virginia pine	55	79	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
47B:				
Wyrick	northern red oak	85	65	northern red oak, black walnut, yellow-poplar, white oak
	black walnut	85	65	
	red maple	65	---	
	sugar maple	65	41	
	white oak	80	62	
	yellow-poplar	95	98	
Marbie	northern red oak	70	52	northern red oak, black walnut, yellow-poplar, white oak
	black walnut	80	62	
	red maple	65	---	
	sugar maple	65	41	
	white oak	65	47	
	yellow-poplar	85	80	
47C:				
Wyrick	northern red oak	85	65	northern red oak, black walnut, yellow-poplar, white oak
	black walnut	85	65	
	red maple	65	---	
	sugar maple	65	41	
	white oak	80	62	
	yellow-poplar	95	98	
Marbie	northern red oak	70	52	northern red oak, black walnut, yellow-poplar, white oak
	black walnut	80	62	
	red maple	65	---	
	sugar maple	65	41	
	white oak	65	47	
	yellow-poplar	85	80	
47D:				
Wyrick	northern red oak	85	65	northern red oak, black walnut, yellow-poplar, white oak
	black walnut	85	65	
	red maple	65	---	
	sugar maple	65	41	
	white oak	80	62	
	yellow-poplar	95	98	
Marbie	northern red oak	70	52	northern red oak, black walnut, yellow-poplar, white oak
	black walnut	80	62	
	red maple	65	---	
	sugar maple	65	41	
	white oak	65	47	
	yellow-poplar	85	80	
W.				
Water				

Table 9.—Forestland Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
1B:							
Austinville	80	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
1C:							
Austinville	80	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
1D:							
Austinville	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
1E:							
Austinville	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
2E:							
Austinville	45	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Rock outcrop	30	Not rated		Not rated		Not rated	
3D:							
Berks	40	Severe		Poorly suited		Slight	
		Restrictive layer	1.00	Slope	1.00	Strength	0.10
		Slope	0.50	Sandiness	0.50		
Weikert	35	Severe		Poorly suited		Slight	
		Restrictive layer	1.00	Slope	1.00	Strength	0.10
		Slope	0.50				
4B:							
Botetourt	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
4C:							
Botetourt	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
5E:							
Brushy	75	Severe		Poorly suited		Slight	
		Slope	1.00	Slope	1.00	Strength	0.10
6E:							
Calvin	75	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
7C:							
Carbo	75	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
7D:							
Carbo	75	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
8D:							
Carbo	45	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
Rock outcrop	30	Not rated		Not rated		Not rated	
8E:							
Carbo	45	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Rock outcrop	30	Not rated		Not rated		Not rated	
9E:							
Carbo	45	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Rock outcrop	30	Not rated		Not rated		Not rated	
10C:							
Chiswell	30	Slight		Moderately suited		Severe	
				Slope	0.50	Low strength	1.00
				Low strength	0.50		
Litz	25	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
Groseclose	20	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
10D:							
Chiswell	30	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Litz	25	Moderate		Poorly suited		Severe	
		Restrictive layer	0.50	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
Groseclose	20	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
10E:							
Chiswell------------	30	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Litz----------------	25	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Groseclose----------	20	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
11D:							
Dekalb--------------	75	Moderate		Poorly suited		Moderate	
		Restrictive layer	0.50	Slope	1.00	Low strength	0.50
		Slope	0.50	Rock fragments	0.50		
		Stoniness	0.50				
11E:							
Dekalb--------------	75	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Stoniness	0.50	Rock fragments	0.50		
12B:							
Derroc--------------	80	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50
13D:							
Drypond-------------	45	Severe		Poorly suited		Slight	
		Restrictive layer	1.00	Slope	1.00	Strength	0.10
		Slope	0.50	Rock fragments	0.50		
		Stoniness	0.50				
Rock outcrop--------	30	Not rated		Not rated		Not rated	
13E:							
Drypond-------------	45	Severe		Poorly suited		Slight	
		Slope	1.00	Slope	1.00	Strength	0.10
		Stoniness	0.50	Rock fragments	0.50		
Rock outcrop--------	30	Not rated		Not rated		Not rated	
14:							
Dumps. mines--------	100	Not rated		Not rated		Not rated	
15B:							
Frederick-----------	80	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
15C:							
Frederick-----------	80	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
15D:							
Frederick-----------	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
15E:							
Frederick-----------	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
15F:							
Frederick-----------	80	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
16B:							
Frederick-----------	80	Slight		Well suited		Moderate	
						Low strength	0.50
16C:							
Frederick-----------	80	Slight		Moderately suited		Moderate	
				Slope	0.50	Low strength	0.50
16D:							
Frederick-----------	80	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
16E:							
Frederick-----------	80	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
17C:							
Frederick-----------	50	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
Urban land----------	30	Not rated		Not rated		Not rated	
18E:							
Greenlee-----------	75	Severe		Poorly suited		Slight	
		Slope	1.00	Slope	1.00	Strength	0.10
19B:							
Ingledove-----------	80	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
20B:							
Ingledove-----------	50	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
Urban land----------	30	Not rated		Not rated		Not rated	
21D:							
Konnarock-----------	75	Severe		Poorly suited		Moderate	
		Restrictive layer	1.00	Slope	1.00	Low strength	0.50
		Slope	0.50				
21E:							
Konnarock-----------	75	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
22B:							
Laidig--------------	75	Slight		Well suited		Moderate	
						Low strength	0.50

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
22C:							
Laidig	75	Slight		Moderately suited		Moderate	
				Slope	0.50	Low strength	0.50
22D:							
Laidig	75	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
23C:							
Laidig	75	Slight		Moderately suited		Moderate	
				Slope	0.50	Low strength	0.50
23D:							
Laidig	75	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
24C:							
Lily	75	Moderate		Moderately suited		Moderate	
		Restrictive layer	0.50	Slope	0.50	Low strength	0.50
24D:							
Lily	75	Moderate		Poorly suited		Moderate	
		Restrictive layer	0.50	Slope	1.00	Low strength	0.50
		Slope	0.50				
24E:							
Lily	75	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Low strength	0.50				
25A:							
Maurertown	75	Severe		Poorly suited		Severe	
		Flooding	1.00	Ponding	1.00	Low strength	1.00
		Wetness	1.00	Flooding	1.00		
		Low strength	0.50	Wetness	0.50		
26A:							
Melvin	75	Severe		Poorly suited		Severe	
		Flooding	1.00	Ponding	1.00	Low strength	1.00
		Wetness	1.00	Flooding	1.00		
		Low strength	0.50	Wetness	0.50		
27D:							
Newbern	40	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
Westmoreland	35	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Sandiness	0.50	Low strength	0.50		
		Restrictive layer	0.50				
27E:							
Newbern	40	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Westmoreland	35	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
28:							
Pits, quarries	100	Not rated		Not rated		Not rated	
29C:							
Poynor	75	Slight		Moderately suited		Slight	
				Slope	0.50	Strength	0.10
29D:							
Poynor	75	Moderate		Poorly suited		Slight	
		Slope	0.50	Slope	1.00	Strength	0.10
29E:							
Poynor	75	Severe		Poorly suited		Slight	
		Slope	1.00	Slope	1.00	Strength	0.10
		Low strength	0.50				
30F:							
Rock outcrop	40	Not rated		Not rated		Not rated	
Newbern	35	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
31B:							
Shelocta	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
31C:							
Shelocta	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
31D:							
Shelocta	75	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
31E:							
Shelocta	75	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
32B:							
Shottower	80	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
32C:							
Shottower	80	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
32D:							
Shottower	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
33A:							
Sindion	75	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
34:							
Slickens	100	Not rated		Not rated		Not rated	
35A:							
Speedwell	80	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50
36D:							
Sylco	40	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Restrictive layer	0.50				
Sylvatus	35	Severe		Poorly suited		Moderate	
		Restrictive layer	1.00	Slope	1.00	Low strength	0.50
		Slope	0.50				
36E:							
Sylco	40	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
Sylvatus	35	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
37B:							
Tate	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
38B:							
Timberville	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
39B:							
Tumbling	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
39C:							
Tumbling	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
39D:							
Tumbling	75	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
39E:							
Tumbling	75	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
40C:							
Tumbling	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
40D:							
Tumbling------------	75	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
40E:							
Tumbling------------	75	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
41:							
Udorthents----------	45	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
42E:							
Weikert-------------	40	Severe		Poorly suited		Slight	
		Slope	1.00	Slope	1.00	Strength	0.10
Berks---------------	35	Severe		Poorly suited		Slight	
		Slope	1.00	Slope	1.00	Strength	0.10
				Sandiness	0.50		
43B:							
Wheeling------------	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
44B:							
Wheeling------------	50	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
Urban land----------	30	Not rated		Not rated		Not rated	
45A:							
Wolfgap-------------	75	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
46C:							
Wurno---------------	45	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Newbern-------------	30	Severe		Moderately suited		Severe	
		Restrictive layer	1.00	Slope	0.50	Low strength	1.00
				Low strength	0.50		
46D:							
Wurno---------------	45	Moderate		Poorly suited		Severe	
		Restrictive layer	0.50	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		
Newbern-------------	30	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Low strength	1.00
		Slope	0.50	Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
46E:							
Wurno	45	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Newbern	30	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
				Low strength	0.50		
47B:							
Wyrick	40	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
Marbie	35	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
47C:							
Wyrick	40	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
Marbie	35	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
47D:							
Wyrick	40	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Marbie	35	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
W:							
Water	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
1B:							
Austinville	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
1C:							
Austinville	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
1D:							
Austinville	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
1E:							
Austinville	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
2E:							
Austinville	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop	30	Not rated		Not rated		Not rated	
3D:							
Berks	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Sandiness	0.50
Weikert	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
4B:							
Botetourt	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
4C:							
Botetourt	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
5E:							
Brushy	75	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
6E:							
Calvin	75	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
7C:							
Carbo	75	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
7D:							
Carbo	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
8D:							
Carbo	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop	30	Not rated		Not rated		Not rated	
8E:							
Carbo	45	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop	30	Not rated		Not rated		Not rated	
9E:							
Carbo	45	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Rock outcrop	30	Not rated		Not rated		Not rated	
10C:							
Chiswell	30	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Litz	25	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Groseclose	20	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
10D:							
Chiswell	30	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Litz	25	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Groseclose	20	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
10E:							
Chiswell------------	30	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Litz----------------	25	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Groseclose----------	20	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
11D:							
Dekalb--------------	75	Moderate		Moderate		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.50	Slope	1.00
						Rock fragments	0.50
11E:							
Dekalb--------------	75	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
12B:							
Derroc--------------	80	Slight		Slight		Poorly suited	
						Flooding	1.00
13D:							
Drypond-------------	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
Rock outcrop--------	30	Not rated		Not rated		Not rated	
13E:							
Drypond-------------	45	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
Rock outcrop--------	30	Not rated		Not rated		Not rated	
14:							
Dumps, mines--------	100	Not rated		Not rated		Not rated	
15B:							
Frederick-----------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
15C:							
Frederick-----------	80	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
15D:							
Frederick-----------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
15E:							
Frederick-----------	80	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
15F:							
Frederick-----------	80	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
16B:							
Frederick-----------	80	Slight		Moderate		Well suited	
				Slope/erodibility	0.50		
16C:							
Frederick-----------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
16D:							
Frederick-----------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
16E:							
Frederick-----------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
17C:							
Frederick-----------	50	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Low strength	0.50
Urban land----------	30	Not rated		Not rated		Not rated	
18E:							
Greenlee------------	75	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
19B:							
Ingledove-----------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
20B:							
Ingledove-----------	50	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
Urban land----------	30	Not rated		Not rated		Not rated	
21D:							
Konnarock-----------	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
21E:							
Konnarock-----------	75	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
22B:							
Laidig--------------	75	Slight		Moderate		Well suited	
				Slope/erodibility	0.50		

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
22C:							
Laidig	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
22D:							
Laidig	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
23C:							
Laidig	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
23D:							
Laidig	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
24C:							
Lily	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
24D:							
Lily	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
24E:							
Lily	75	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
25A:							
Maurertown	75	Slight		Slight		Poorly suited	
						Ponding	1.00
						Flooding	1.00
						Wetness	0.50
26A:							
Melvin	75	Slight		Slight		Poorly suited	
						Ponding	1.00
						Flooding	1.00
						Wetness	0.50
27D:							
Newbern	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Westmoreland	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
27E:							
Newbern	40	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Westmoreland	35	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
28:							
Pits, quarries	100	Not rated		Not rated		Not rated	
29C:							
Poynor	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
29D:							
Poynor	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
29E:							
Poynor	75	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
30F:							
Rock outcrop	40	Not rated		Not rated		Not rated	
Newbern	35	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
31B:							
Shelocta	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
31C:							
Shelocta	75	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
31D:							
Shelocta	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
31E:							
Shelocta	75	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
32B:							
Shottower	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
32C:							
Shottower	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
32D:							
Shottower	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
33A:							
Sindion	75	Slight		Slight		Poorly suited	
						Flooding	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
34:							
Slickens	100	Not rated		Not rated		Not rated	
35A:							
Speedwell	80	Slight		Slight		Poorly suited	
						Flooding	1.00
36D:							
Sylco	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
Sylvatus	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
36E:							
Sylco	40	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
Sylvatus	35	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
37B:							
Tate	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
38B:							
Timberville	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
39B:							
Tumbling	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
39C:							
Tumbling	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
39D:							
Tumbling	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
39E:							
Tumbling	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
40C:							
Tumbling	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
40D:							
Tumbling	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
40E:							
Tumbling------------	75	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
41:							
Udorthents----------	45	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
42E:							
Weikert-------------	40	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
Berks---------------	35	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Sandiness	0.50
43B:							
Wheeling------------	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
44B:							
Wheeling------------	50	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
Urban land----------	30	Not rated		Not rated		Not rated	
45A:							
Wolfgap-------------	75	Slight		Slight		Poorly suited	
						Flooding	1.00
						Low strength	0.50
46C:							
Wurno---------------	45	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Newbern-------------	30	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
46D:							
Wurno---------------	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Newbern-------------	30	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
46E:							
Wurno---------------	45	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Newbern-------------	30	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
47B:							
Wyrick	40	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
Marbie	35	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
47C:							
Wyrick	40	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Marbie	35	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
47D:							
Wyrick	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Marbie	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
W:							
Water	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part III

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
1B:							
Austinville	80	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
				Slope	0.50		
1C:							
Austinville	80	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
				Slope	0.50		
1D:							
Austinville	80	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.50	Slope	0.50
1E:							
Austinville	80	Moderately suited		Unsuited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	1.00	Low strength	0.50
				Stickiness; high plasticity index	0.50	Slope	0.50
2E:							
Austinville	45	Moderately suited		Unsuited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	1.00	Slope	0.50
				Stickiness; high plasticity index	0.50	Low strength	0.50
Rock outcrop	30	Not rated		Not rated		Not rated	
3D:							
Berks	40	Moderately suited		Poorly suited		Moderately suited	
		Sandiness	0.50	Slope	0.75	Sandiness	0.50
		Rock fragments	0.50	Rock fragments	0.75	Slope	0.50
				Sandiness	0.50		
Weikert	35	Poorly suited		Unsuited		Moderately suited	
		Rock fragments	0.75	Rock fragments	1.00	Slope	0.50
				Slope	0.75		
4B:							
Botetourt	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
4C:							
Botetourt	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
5E:							
Brushy	75	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Sandiness	0.50	Rock fragments	1.00		
		Slope	0.50	Sandiness	0.50		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
6E:							
Calvin	75	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
7C:							
Carbo	75	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
				Slope	0.50		
7D:							
Carbo	75	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
						Slope	0.50
				Slope	0.75		
8D:							
Carbo	45	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
				Slope	0.75		
Rock outcrop	30	Not rated		Not rated		Not rated	
8E:							
Carbo	45	Poorly suited		Unsuited		Poorly suited	
		Stickiness; high plasticity index	0.75	Slope	1.00	Slope	1.00
				Stickiness; high plasticity index	0.75	Low strength	0.50
		Slope	0.50				
Rock outcrop	30	Not rated		Not rated		Not rated	
9E:							
Carbo	45	Poorly suited		Unsuited		Poorly suited	
		Stickiness; high plasticity index	0.75	Slope	1.00	Slope	1.00
				Stickiness; high plasticity index	0.75	Low strength	0.50
		Slope	0.50				
Rock outcrop	30	Not rated		Not rated		Not rated	
10C:							
Chiswell	30	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
				Slope	0.50		
Litz	25	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Rock fragments	1.00	Low strength	0.50
				Slope	0.50		
Groseclose	20	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
				Slope	0.50		
10D:							
Chiswell	30	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
				Slope	0.75	Slope	0.50

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
10D:							
Litz	25	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Rock fragments	1.00	Low strength	0.50
				Slope	0.75	Slope	0.50
Groseclose	20	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.75	Slope	0.50
10E:							
Chiswell	30	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	0.75	Low strength	0.50
Litz	25	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	1.00	Low strength	0.50
Groseclose	20	Poorly suited		Unsuited		Poorly suited	
		Stickiness; high plasticity index	0.75	Slope	1.00	Slope	1.00
		Slope	0.50	Stickiness; high plasticity index	0.75	Low strength	0.50
11D:							
Dekalb	75	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Rock fragments	0.50
				Rock fragments	0.75	Slope	0.50
11E:							
Dekalb	75	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	0.75	Rock fragments	0.50
12B:							
Derroc	80	Moderately suited		Unsuited		Well suited	
		Rock fragments	0.50	Rock fragments	1.00		
13D:							
Drypond	45	Moderately suited		Poorly suited		Moderately suited	
		Sandiness	0.50	Slope	0.75	Rock fragments	0.50
		Rock fragments	0.50	Rock fragments	0.75	Slope	0.50
				Sandiness	0.50		
Rock outcrop	30	Not rated		Not rated		Not rated	
13E:							
Drypond	45	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Sandiness	0.50	Rock fragments	0.75	Rock fragments	0.50
		Rock fragments	0.50	Sandiness	0.50		
Rock outcrop	30	Not rated		Not rated		Not rated	
14:							
Dumps, mines	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
15B:							
Frederick-----------	80	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
				Slope	0.50		
15C:							
Frederick-----------	80	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
				Slope	0.50		
15D:							
Frederick-----------	80	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.50	Slope	0.50
15E:							
Frederick-----------	80	Moderately suited		Unsuited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	1.00	Low strength	0.50
				Stickiness; high plasticity index	0.50	Slope	0.50
15F:							
Frederick-----------	80	Moderately suited		Unsuited		Poorly suited	
		Stickiness; high plasticity index	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
16B:							
Frederick-----------	80	Moderately suited		Moderately suited		Well suited	
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50		
				Rock fragments	0.50		
				Slope	0.50		
16C:							
Frederick-----------	80	Moderately suited		Moderately suited		Well suited	
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50		
				Slope	0.50		
				Rock fragments	0.50		
16D:							
Frederick-----------	80	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Slope	0.50
				Stickiness; high plasticity index	0.50		
				Rock fragments	0.50		
16E:							
Frederick-----------	80	Moderately suited		Unsuited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	1.00	Slope	0.50
				Stickiness; high plasticity index	0.50		
				Rock fragments	0.50		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
17C:							
Frederick	50	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
				Slope	0.50		
Urban land	30	Not rated		Not rated		Not rated	
18E:							
Greenlee	75	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	1.00		
19B:							
Ingledove	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
20B:							
Ingledove	50	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
Urban land	30	Not rated		Not rated		Not rated	
21D:							
Konnarock	75	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Slope	0.50
				Rock fragments	0.75		
21E:							
Konnarock	75	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75		
22B:							
Laidig	75	Well suited		Moderately suited		Well suited	
				Slope	0.50		
22C:							
Laidig	75	Well suited		Moderately suited		Well suited	
				Slope	0.50		
22D:							
Laidig	75	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
23C:							
Laidig	75	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		
23D:							
Laidig	75	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
				Rock fragments	0.50		
24C:							
Lily	75	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
24D:							
Lily	75	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
				Rock fragments	0.50		
24E:							
Lily	75	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50		
25A:							
Maurertown	75	Poorly suited		Poorly suited		Poorly suited	
		Wetness	0.75	Wetness	0.75	Wetness	1.00
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
26A:							
Melvin	75	Poorly suited		Poorly suited		Poorly suited	
		Wetness	0.75	Wetness	0.75	Wetness	1.00
						Low strength	0.50
27D:							
Newbern	40	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
Westmoreland	35	Moderately suited		Poorly suited		Moderately suited	
		Sandiness	0.50	Slope	0.75	Low strength	0.50
				Sandiness	0.50	Slope	0.50
27E:							
Newbern	40	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
Westmoreland	35	Moderately suited		Unsuited		Poorly suited	
		Sandiness	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Sandiness	0.50	Low strength	0.50
28:							
Pits, quarries	100	Not rated		Not rated		Not rated	
29C:							
Poynor	75	Moderately suited		Unsuited		Well suited	
		Rock fragments	0.50	Rock fragments	1.00		
				Slope	0.50		
29D:							
Poynor	75	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Rock fragments	1.00	Slope	0.50
				Slope	0.75		
29E:							
Poynor	75	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	1.00		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
30F:							
Rock outcrop	40	Not rated		Not rated		Not rated	
Newbern	35	Poorly suited		Unsuited		Poorly suited	
		Slope	0.75	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
31B:							
Shelocta	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
31C:							
Shelocta	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
31D:							
Shelocta	75	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
31E:							
Shelocta	75	Moderately suited		Unsuited		Moderately suited	
		Slope	0.50	Slope	1.00	Slope	0.50
						Low strength	0.50
32B:							
Shottower	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
32C:							
Shottower	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
32D:							
Shottower	80	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
33A:							
Sindion	75	Well suited		Well suited		Moderately suited	
						Low strength	0.50
34:							
Slickens	100	Not rated		Not rated		Not rated	
35A:							
Speedwell	80	Well suited		Well suited		Well suited	
36D:							
Sylco	40	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Slope	0.50
				Rock fragments	0.75		
Sylvatus	35	Moderately suited		Unsuited		Moderately suited	
		Rock fragments	0.50	Rock fragments	1.00	Slope	0.50
				Slope	0.75		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
36E:							
Sylco	40	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.75		
Sylvatus	35	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	1.00		
37B:							
Tate	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
38B:							
Timberville	75	Well suited		Well suited		Moderately suited	
						Low strength	0.50
39B:							
Tumbling	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
39C:							
Tumbling	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
39D:							
Tumbling	75	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
39E:							
Tumbling	75	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
						Slope	0.50
40C:							
Tumbling	75	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
				Slope	0.50		
40D:							
Tumbling	75	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
40E:							
Tumbling	75	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
41:							
Udorthents	45	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
42E:							
Weikert	40	Poorly suited		Unsuited		Poorly suited	
		Rock fragments	0.75	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	1.00		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
42E:							
Berks	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Sandiness	0.50	Rock fragments	0.75	Sandiness	0.50
		Rock fragments	0.50	Sandiness	0.50		
43B:							
Wheeling	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
44B:							
Wheeling	50	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
Urban land	30	Not rated		Not rated		Not rated	
45A:							
Wolfgap	75	Well suited		Well suited		Moderately suited	
						Low strength	0.50
46C:							
Wurno	45	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
				Slope	0.50		
Newbern	30	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
				Slope	0.50		
46D:							
Wurno	45	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Low strength	0.50
				Slope	0.75	Slope	0.50
Newbern	30	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
46E:							
Wurno	45	Moderately suited		Unsuited		Poorly suited	
		Rock fragments	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Rock fragments	0.75	Low strength	0.50
Newbern	30	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
47B:							
Wyrick	40	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
Marbie	35	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
47C:							
Wyrick	40	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
Marbie	35	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
47D:							
Wyrick	40	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
Marbie	35	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
W:							
Water	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part IV

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1B:					
Austinville---------	80	Well suited		Well suited	
1C:					
Austinville---------	80	Well suited		Well suited	
1D:					
Austinville---------	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
1E:					
Austinville---------	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
2E:					
Austinville---------	45	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Rock outcrop--------	30	Not rated		Not rated	
3D:					
Berks---------------	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
Weikert-------------	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
4B:					
Botetourt-----------	75	Well suited		Well suited	
4C:					
Botetourt-----------	75	Well suited		Well suited	
5E:					
Brushy--------------	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Restrictive layer	0.50
6E:					
Calvin--------------	75	Unsuited		Unsuited	
		Slope	1.00	Restrictive layer	1.00
		Rock fragments	0.50	Slope	1.00
7C:					
Carbo---------------	75	Poorly suited		Poorly suited	
		Stickiness; high plasticity index	0.50	Restrictive layer	0.50

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
7D:					
Carbo	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Stickiness; high plasticity index	0.50	Restrictive layer	0.50
8D:					
Carbo	45	Poorly suited		Poorly suited	
		Stickiness; high plasticity index	0.50	Slope	0.50
		Slope	0.50	Restrictive layer	0.50
Rock outcrop	30	Not rated		Not rated	
8E:					
Carbo	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50	Restrictive layer	0.50
Rock outcrop	30	Not rated		Not rated	
9E:					
Carbo	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50	Restrictive layer	0.50
Rock outcrop	30	Not rated		Not rated	
10C:					
Chiswell	30	Poorly suited		Well suited	
		Rock fragments	0.50		
Litz	25	Poorly suited		Well suited	
		Rock fragments	0.50		
Groseclose	20	Poorly suited		Well suited	
		Stickiness; high plasticity index	0.50		
10D:					
Chiswell	30	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
Litz	25	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
Groseclose	20	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Stickiness; high plasticity index	0.50		
10E:					
Chiswell	30	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
10E:					
Litz	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Groseclose	20	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50		
11D:					
Dekalb	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Rock fragments	0.50
				Restrictive layer	0.50
11E:					
Dekalb	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Rock fragments	0.50
				Restrictive layer	0.50
12B:					
Derroc	80	Poorly suited		Poorly suited	
		Rock fragments	0.50	Rock fragments	0.50
13D:					
Drypond	45	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
		Rock fragments	0.50	Slope	0.50
				Rock fragments	0.50
Rock outcrop	30	Not rated		Not rated	
13E:					
Drypond	45	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Restrictive layer	1.00
				Rock fragments	0.50
Rock outcrop	30	Not rated		Not rated	
14:					
Dumps, mines	100	Not rated		Not rated	
15B:					
Frederick	80	Well suited		Well suited	
15C:					
Frederick	80	Well suited		Well suited	
15D:					
Frederick	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
15E:					
Frederick	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
15F:					
Frederick-----------	80	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
16B:					
Frederick-----------	80	Well suited		Well suited	
16C:					
Frederick-----------	80	Well suited		Well suited	
16D:					
Frederick-----------	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
16E:					
Frederick-----------	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
17C:					
Frederick-----------	50	Well suited		Well suited	
Urban land----------	30	Not rated		Not rated	
18E:					
Greenlee------------	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
19B:					
Ingledove-----------	80	Well suited		Well suited	
20B:					
Ingledove-----------	50	Well suited		Well suited	
Urban land----------	30	Not rated		Not rated	
21D:					
Konnarock-----------	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50	Restrictive layer	0.50
21E:					
Konnarock-----------	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Restrictive layer	0.50
22B:					
Laidig--------------	75	Well suited		Well suited	
22C:					
Laidig--------------	75	Well suited		Well suited	
22D:					
Laidig--------------	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
23C:					
Laidig--------------	75	Well suited		Well suited	

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
23D:					
Laidig	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
24C:					
Lily	75	Well suited		Poorly suited	
				Restrictive layer	0.50
24D:					
Lily	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
24E:					
Lily	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
				Restrictive layer	0.50
25A:					
Maurertown	75	Unsuited		Unsuited	
		Wetness	0.75	Wetness	1.00
26A:					
Melvin	75	Unsuited		Unsuited	
		Wetness	0.75	Wetness	1.00
27D:					
Newbern	40	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
				Slope	0.50
Westmoreland	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
27E:					
Newbern	40	Unsuited		Unsuited	
		Slope	1.00	Restrictive layer	1.00
				Slope	1.00
Westmoreland	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
28:					
Pits, quarries	100	Not rated		Not rated	
29C:					
Poynor	75	Poorly suited		Well suited	
		Rock fragments	0.50		
29D:					
Poynor	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
29E:					
Poynor	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
30F:					
Rock outcrop	40	Not rated		Not rated	
Newbern	35	Unsuited		Unsuited	
		Slope	1.00	Restrictive layer	1.00
				Slope	1.00
31B:					
Shelocta	75	Well suited		Well suited	
31C:					
Shelocta	75	Well suited		Well suited	
31D:					
Shelocta	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
31E:					
Shelocta	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
32B:					
Shottower	80	Well suited		Well suited	
32C:					
Shottower	80	Well suited		Well suited	
32D:					
Shottower	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
33A:					
Sindion	75	Well suited		Well suited	
34:					
Slickens	100	Not rated		Not rated	
35A:					
Speedwell	80	Well suited		Well suited	
36D:					
Sylco	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
		Rock fragments	0.50		
Sylvatus	35	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
		Rock fragments	0.50	Slope	0.50
36E:					
Sylco	40	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Sylvatus	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50	Restrictive layer	1.00
37B:					
Tate	75	Well suited		Well suited	

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
38B:					
Timberville	75	Well suited		Well suited	
39B:					
Tumbling	75	Well suited		Well suited	
39C:					
Tumbling	75	Well suited		Well suited	
39D:					
Tumbling	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
39E:					
Tumbling	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
40C:					
Tumbling	75	Well suited		Well suited	
40D:					
Tumbling	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
40E:					
Tumbling	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
41:					
Udorthents	45	Not rated		Not rated	
Urban land	30	Not rated		Not rated	
42E:					
Weikert	40	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
Berks	35	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	0.50		
43B:					
Wheeling	75	Well suited		Well suited	
44B:					
Wheeling	50	Well suited		Well suited	
Urban land	30	Not rated		Not rated	
45A:					
Wolfgap	75	Well suited		Well suited	
46C:					
Wurno	45	Poorly suited		Unsuited	
		Rock fragments	0.50	Restrictive layer	1.00
Newbern	30	Well suited		Unsuited	
				Restrictive layer	1.00

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
46D:					
Wurno---------------	45	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
		Rock fragments	0.50	Slope	0.50
Newbern-------------	30	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
				Slope	0.50
46E:					
Wurno---------------	45	Unsuited		Unsuited	
		Slope	1.00	Restrictive layer	1.00
		Rock fragments	0.50	Slope	1.00
Newbern-------------	30	Unsuited		Unsuited	
		Slope	1.00	Restrictive layer	1.00
				Slope	1.00
47B:					
Wyrick--------------	40	Well suited		Well suited	
Marbie--------------	35	Well suited		Well suited	
47C:					
Wyrick--------------	40	Well suited		Well suited	
Marbie--------------	35	Well suited		Well suited	
47D:					
Wyrick--------------	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Marbie--------------	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
W:					
Water---------------	100	Not rated		Not rated	

Table 9.—Forestland Management, Part V

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1B:					
Austinville	80	Moderate		Low	
		Texture/rock fragments	0.50		
1C:					
Austinville	80	Moderate		Low	
		Texture/rock fragments	0.50		
1D:					
Austinville	80	Moderate		Low	
		Texture/rock fragments	0.50		
1E:					
Austinville	80	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
2E:					
Austinville	45	Moderate		Low	
		Texture/rock fragments	0.50		
Rock outcrop	30	Not rated		Not rated	
3D:					
Berks	40	Moderate		Low	
		Texture/rock fragments	0.50		
Weikert	35	High		Low	
		Texture/surface depth/rock fragments	1.00		
4B:					
Botetourt	75	Low		Low	
		Texture/rock fragments	0.10		
4C:					
Botetourt	75	Low		Low	
		Texture/rock fragments	0.10		
5E:					
Brushy	75	Low		Moderate	
				Soil reaction	0.50

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
6E:					
Calvin	75	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
7C:					
Carbo	75	Moderate		Low	
		Texture/rock fragments	0.50		
7D:					
Carbo	75	Moderate		Low	
		Texture/rock fragments	0.50		
8D:					
Carbo	45	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Rock outcrop	30	Not rated		Not rated	
8E:					
Carbo	45	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Rock outcrop	30	Not rated		Not rated	
9E:					
Carbo	45	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Rock outcrop	30	Not rated		Not rated	
10C:					
Chiswell	30	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
Litz	25	Moderate		Low	
		Texture/rock fragments	0.50		
Groseclose	20	Moderate		Low	
		Texture/rock fragments	0.50		
10D:					
Chiswell	30	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
Litz	25	Moderate		Low	
		Texture/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
10D:					
Groseclose	20	Moderate		Low	
		Texture/rock fragments	0.50		
10E:					
Chiswell	30	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
Litz	25	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Groseclose	20	Moderate		Low	
		Texture/rock fragments	0.50		
11D:					
Dekalb	75	Moderate		Low	
		Texture/rock fragments	0.50		
11E:					
Dekalb	75	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
12B:					
Derroc	80	Low		Low	
		Texture/rock fragments	0.10		
13D:					
Drypond	45	Moderate		Moderate	
		Texture/rock fragments	0.50	Soil reaction	0.50
Rock outcrop	30	Not rated		Not rated	
13E:					
Drypond	45	High		Moderate	
		Texture/slope/ rock fragments	1.00	Soil reaction	0.50
Rock outcrop	30	Not rated		Not rated	
14:					
Dumps, mines	100	Not rated		Not rated	
15B:					
Frederick	80	Moderate		Low	
		Texture/rock fragments	0.50		
15C:					
Frederick	80	Moderate		Low	
		Texture/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
15D:					
Frederick-----------	80	Moderate		Low	
		Texture/rock fragments	0.50		
15E:					
Frederick-----------	80	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
15F:					
Frederick-----------	80	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
16B:					
Frederick-----------	80	Moderate		Low	
		Texture/rock fragments	0.50		
16C:					
Frederick-----------	80	Moderate		Low	
		Texture/rock fragments	0.50		
16D:					
Frederick-----------	80	Moderate		Low	
		Texture/rock fragments	0.50		
16E:					
Frederick-----------	80	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
17C:					
Frederick-----------	50	Moderate		Low	
		Texture/rock fragments	0.50		
Urban land----------	30	Not rated		Not rated	
18E:					
Greenlee------------	75	Moderate		Low	
		Texture/rock fragments	0.50		
19B:					
Ingledove-----------	80	Low		Low	
		Texture/rock fragments	0.10		
20B:					
Ingledove-----------	50	Low		Low	
		Texture/rock fragments	0.10		
Urban land----------	30	Not rated		Not rated	

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
21D:					
Konnarock-----------	75	High		Low	
		Texture/surface depth/rock fragments	1.00		
21E:					
Konnarock-----------	75	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
22B:					
Laidig--------------	75	Moderate		Moderate	
		Texture/rock fragments	0.50	Soil reaction	0.50
22C:					
Laidig--------------	75	Moderate		Moderate	
		Texture/rock fragments	0.50	Soil reaction	0.50
22D:					
Laidig--------------	75	Moderate		Moderate	
		Texture/rock fragments	0.50	Soil reaction	0.50
23C:					
Laidig--------------	75	Moderate		Moderate	
		Texture/rock fragments	0.50	Soil reaction	0.50
23D:					
Laidig--------------	75	Moderate		Moderate	
		Texture/rock fragments	0.50	Soil reaction	0.50
24C:					
Lily----------------	75	Moderate		Low	
		Texture/rock fragments	0.50		
24D:					
Lily----------------	75	Moderate		Low	
		Texture/rock fragments	0.50		
24E:					
Lily----------------	75	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
25A:					
Maurertown----------	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
26A:					
Melvin	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
27D:					
Newbern	40	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
Westmoreland	35	Moderate		Low	
		Texture/rock fragments	0.50		
27E:					
Newbern	40	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
Westmoreland	35	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
28:					
Pits, quarries	100	Not rated		Not rated	
29C:					
Poynor	75	Moderate		Moderate	
		Texture/rock fragments	0.50	Available water	0.50
29D:					
Poynor	75	Moderate		Low	
		Texture/rock fragments	0.50		
29E:					
Poynor	75	High		Low	
		Texture/slope/ rock fragments	1.00		
30F:					
Rock outcrop	40	Not rated		Not rated	
Newbern	35	High		Moderate	
		Texture/slope/ surface depth/ rock fragments	1.00	Available water	0.50
31B:					
Shelocta	75	Moderate		Low	
		Texture/rock fragments	0.50		
31C:					
Shelocta	75	Moderate		Low	
		Texture/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
31D:					
Shelocta	75	Moderate		Low	
		Texture/rock fragments	0.50		
31E:					
Shelocta	75	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
32B:					
Shottower	80	Moderate		Low	
		Texture/rock fragments	0.50		
32C:					
Shottower	80	Moderate		Low	
		Texture/rock fragments	0.50		
32D:					
Shottower	80	Moderate		Low	
		Texture/rock fragments	0.50		
33A:					
Sindion	75	Low		Low	
		Texture/rock fragments	0.10		
34:					
Slickens	100	Not rated		Not rated	
35A:					
Speedwell	80	Low		Low	
		Texture/rock fragments	0.10		
36D:					
Sylco	40	Moderate		Low	
		Texture/rock fragments	0.50		
Sylvatus	35	High		Low	
		Texture/surface depth/rock fragments	1.00		
36E:					
Sylco	40	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Sylvatus	35	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
37B:					
Tate	75	Moderate		Low	
		Texture/rock fragments	0.50		
38B:					
Timberville	75	Low		Low	
		Texture/rock fragments	0.10		
39B:					
Tumbling	75	Moderate		Low	
		Texture/rock fragments	0.50		
39C:					
Tumbling	75	Moderate		Low	
		Texture/rock fragments	0.50		
39D:					
Tumbling	75	Moderate		Low	
		Texture/rock fragments	0.50		
39E:					
Tumbling	75	Moderate		Low	
		Texture/rock fragments	0.50		
40C:					
Tumbling	75	Moderate		Low	
		Texture/rock fragments	0.50		
40D:					
Tumbling	75	Moderate		Low	
		Texture/rock fragments	0.50		
40E:					
Tumbling	75	Moderate		Low	
		Texture/rock fragments	0.50		
41:					
Udorthents	45	Not rated		Not rated	
Urban land	30	Not rated		Not rated	
42E:					
Weikert	40	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
Berks	35	High		Low	
		Texture/slope/ rock fragments	1.00		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
43B:					
Wheeling	75	Low		Low	
		Texture/rock fragments	0.10		
44B:					
Wheeling	50	Low		Low	
		Texture/rock fragments	0.10		
Urban land	30	Not rated		Not rated	
45A:					
Wolfgap	75	Low		Low	
46C:					
Wurno	45	Moderate		Low	
		Texture/rock fragments	0.50		
Newbern	30	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
46D:					
Wurno	45	Moderate		Low	
		Texture/rock fragments	0.50		
Newbern	30	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
46E:					
Wurno	45	Moderate		Low	
		Texture/slope/ rock fragments	0.50		
Newbern	30	High		Low	
		Texture/slope/ surface depth/ rock fragments	1.00		
47B:					
Wyrick	40	Moderate		Low	
		Texture/rock fragments	0.50		
Marbie	35	Moderate		Low	
		Texture/rock fragments	0.50		
47C:					
Wyrick	40	Moderate		Low	
		Texture/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
47C:					
Marbie	35	Moderate		Low	
		Texture/rock fragments	0.50		
47D:					
Wyrick	40	Moderate		Low	
		Texture/rock fragments	0.50		
Marbie	35	Moderate		Low	
		Texture/rock fragments	0.50		
W:					
Water	100	Not rated		Not rated	

Table 10.—Recreational Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
1B:							
Austinville	80	Not limited		Not limited		Somewhat limited	
						Slope	0.88
1C:							
Austinville	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
1D:							
Austinville	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
1E:							
Austinville	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
2E:							
Austinville	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
3D:							
Berks	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
						Depth to bedrock	0.65
Weikert	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Gravel content	1.00	Gravel content	1.00	Depth to bedrock	1.00
4B:							
Botetourt	75	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.98
		Depth to saturated zone	0.98			Slope	0.88
4C:							
Botetourt	75	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.98	Depth to saturated zone	0.75	Slope	1.00
		Slope	0.37	Slope	0.37	Depth to saturated zone	0.98
5E:							
Brushy	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
						Depth to bedrock	0.16

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
6E:							
Calvin	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Depth to bedrock	0.65
7C:							
Carbo	75	Somewhat limited		Somewhat limited		Very limited	
		Slow water movement	0.96	Slow water movement	0.96	Slope	1.00
		Slope	0.37	Slope	0.37	Slow water movement	0.96
						Depth to bedrock	0.90
7D:							
Carbo	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.90
8D:							
Carbo	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.90
Rock outcrop	30	Not rated		Not rated		Not rated	
8E:							
Carbo	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.90
Rock outcrop	30	Not rated		Not rated		Not rated	
9E:							
Carbo	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
						Depth to bedrock	0.90
Rock outcrop	30	Not rated		Not rated		Not rated	
10C:							
Chiswell	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	0.37	Slope	0.37	Depth to bedrock	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
Litz	25	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
						Depth to bedrock	0.90
						Gravel content	0.27

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
10C:							
Groseclose----------	20	Somewhat limited		Somewhat limited		Very limited	
		Slow water movement	0.96	Slow water movement	0.96	Slope	1.00
		Slope	0.37	Slope	0.37	Slow water movement	0.96
10D:							
Chiswell------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
Litz----------------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.90
						Gravel content	0.27
Groseclose----------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
10E:							
Chiswell------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
Litz----------------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.90
						Gravel content	0.27
Groseclose----------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
11D:							
Dekalb--------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
11E:							
Dekalb--------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Large stones content	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
12B:							
Derroc--------------	80	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Large stones content	0.88
						Gravel content	0.68
						Flooding	0.60

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
13D:							
Drypond------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Depth to bedrock	1.00
Rock outcrop--------	30	Not rated		Not rated		Not rated	
13E:							
Drypond------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Large stones content	1.00	Large stones content	1.00	Depth to bedrock	1.00
Rock outcrop--------	30	Not rated		Not rated		Not rated	
14:							
Dumps, mines--------	100	Not rated		Not rated		Not rated	
15B:							
Frederick-----------	80	Not limited		Not limited		Somewhat limited	
						Slope	0.88
15C:							
Frederick-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
15D:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
15E:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
15F:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
16B:							
Frederick-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.61	Gravel content	0.61	Gravel content	1.00
						Slope	0.88
16C:							
Frederick-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.61	Gravel content	0.61	Slope	1.00
		Slope	0.37	Slope	0.37	Gravel content	1.00
16D:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.61	Gravel content	0.61	Gravel content	1.00
16E:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.61	Gravel content	0.61	Gravel content	1.00

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
17C:							
Frederick	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Slope	1.00
Urban land	30	Not rated		Not rated		Not rated	
18E:							
Greenlee	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Gravel content	1.00
						Large stones content	0.99
19B:							
Ingledove	80	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Slope	0.88
20B:							
Ingledove	50	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Slope	0.88
Urban land	30	Not rated		Not rated		Not rated	
21D:							
Konnarock	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.50	Gravel content	0.50	Slope	1.00
						Large stones content	0.92
21E:							
Konnarock	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.50	Gravel content	0.50	Slope	1.00
						Large stones content	0.92
22B:							
Laidig	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to cemented pan	0.35	Depth to cemented pan	0.35	Slope	0.88
						Depth to cemented pan	0.35
						Gravel content	0.18
22C:							
Laidig	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
		Depth to cemented pan	0.35	Depth to cemented pan	0.35	Depth to cemented pan	0.35
						Gravel content	0.18
22D:							
Laidig	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to cemented pan	0.35	Depth to cemented pan	0.35	Depth to cemented pan	0.35
						Gravel content	0.18

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
23C:							
Laidig	75	Somewhat limited		Somewhat limited		Very limited	
		Large stones content	0.47	Large stones content	0.47	Slope	1.00
		Slope	0.37	Slope	0.37	Large stones content	0.47
		Depth to cemented pan	0.35	Depth to cemented pan	0.35	Depth to cemented pan	0.35
23D:							
Laidig	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Large stones content	0.47
		Depth to cemented pan	0.35	Depth to cemented pan	0.35	Depth to cemented pan	0.35
24C:							
Lily	75	Somewhat limited		Somewhat limited		Very limited	
		Large stones content	0.47	Large stones content	0.47	Slope	1.00
		Slope	0.37	Slope	0.37	Large stones content	0.47
						Depth to bedrock	0.46
24D:							
Lily	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Large stones content	0.47
						Depth to bedrock	0.46
24E:							
Lily	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Large stones content	0.47
						Depth to bedrock	0.46
25A:							
Maurertown	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Slow water movement	1.00	Slow water movement	1.00
26A:							
Melvin	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Ponding	1.00	Flooding	0.40	Ponding	1.00
27D:							
Newbern	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
27D:							
Westmoreland--------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.37
27E:							
Newbern-------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
Westmoreland--------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.37
28:							
Pits, quarries------	100	Not rated		Not rated		Not rated	
29C:							
Poynor--------------	75	Very limited		Very limited		Very limited	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	0.37	Slope	0.37	Slope	1.00
29D:							
Poynor--------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
29E:							
Poynor--------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
30F:							
Rock outcrop--------	40	Not rated		Not rated		Not rated	
Newbern-------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
31B:							
Shelocta------------	75	Not limited		Not limited		Somewhat limited	
						Slope	0.88
31C:							
Shelocta------------	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
31D:							
Shelocta------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
31E:							
Shelocta------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
32B:							
Shottower	80	Not limited		Not limited		Somewhat limited	
						Slope	0.88
32C:							
Shottower	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
32D:							
Shottower	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
33A:							
Sindion	75	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.98
		Depth to saturated zone	0.98			Flooding	0.60
34:							
Slickens	100	Not rated		Not rated		Not rated	
35A:							
Speedwell	80	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
36D:							
Sylco	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.59	Gravel content	0.59	Gravel content	1.00
						Large stones content	0.08
Sylvatus	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Gravel content	0.83	Gravel content	0.83	Depth to bedrock	1.00
36E:							
Sylco	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.59	Gravel content	0.59	Gravel content	1.00
						Large stones content	0.08
Sylvatus	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Gravel content	0.83	Gravel content	0.83	Depth to bedrock	1.00
37B:							
Tate	75	Not limited		Not limited		Somewhat limited	
						Slope	0.88
38B:							
Timberville	75	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Slope	0.50
39B:							
Tumbling	75	Not limited		Not limited		Somewhat limited	
						Slope	0.88

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
39C:							
Tumbling	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
39D:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
39E:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
40C:							
Tumbling	75	Somewhat limited		Somewhat limited		Very limited	
		Large stones content	0.47	Large stones content	0.47	Slope	1.00
		Slope	0.37	Slope	0.37	Large stones content	0.47
40D:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Large stones content	0.47
40E:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Large stones content	0.47
41:							
Udorthents	45	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
42E:							
Weikert	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Gravel content	1.00	Gravel content	1.00	Depth to bedrock	1.00
Berks	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
						Depth to bedrock	0.65
43B:							
Wheeling	75	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Slope	0.88
44B:							
Wheeling	50	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Slope	0.88
Urban land	30	Not rated		Not rated		Not rated	
45A:							
Wolfgap	75	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
46C:							
Wurno	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
						Gravel content	0.56
						Depth to bedrock	0.54
Newbern	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Slow water movement	0.60	Slow water movement	0.60	Depth to bedrock	1.00
		Slope	0.37	Slope	0.37	Slow water movement	0.60
46D:							
Wurno	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.56
						Depth to bedrock	0.54
Newbern	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
46E:							
Wurno	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.56
						Depth to bedrock	0.54
Newbern	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	0.60	Slow water movement	0.60	Slow water movement	0.60
47B:							
Wyrick	40	Not limited		Not limited		Somewhat limited	
						Slope	0.88
Marbie	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to cemented pan	0.99	Depth to cemented pan	0.99	Depth to cemented pan	0.99
		Depth to saturated zone	0.39	Depth to saturated zone	0.19	Slope	0.88
						Depth to saturated zone	0.39
47C:							
Wyrick	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
Marbie	35	Somewhat limited		Somewhat limited		Very limited	
		Depth to cemented pan	0.99	Depth to cemented pan	0.99	Slope	1.00
		Depth to saturated zone	0.39	Slope	0.37	Depth to cemented pan	0.99
		Slope	0.37	Depth to saturated zone	0.19	Depth to saturated zone	0.39

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
47D:							
Wyrick	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Marbie	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to cemented pan	0.99	Depth to cemented pan	0.99	Depth to cemented pan	0.99
		Depth to saturated zone	0.39	Depth to saturated zone	0.19	Depth to saturated zone	0.39
W:							
Water	100	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
1B:							
Austinville	80	Not limited		Not limited		Not limited	
1C:							
Austinville	80	Not limited		Not limited		Somewhat limited	
						Slope	0.37
1D:							
Austinville	80	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
1E:							
Austinville	80	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
2E:							
Austinville	45	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.08	Slope	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
3D:							
Berks	40	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Gravel content	1.00
						Droughty	0.75
Weikert	35	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
4B:							
Botetourt	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
4C:							
Botetourt	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
						Slope	0.37
5E:							
Brushy	75	Very limited		Very limited		Very limited	
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Gravel content	1.00
						Droughty	1.00
6E:							
Calvin	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.65
						Droughty	0.49

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
7C:							
Carbo	75	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.90
						Droughty	0.44
						Slope	0.37
7D:							
Carbo	75	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50			Depth to bedrock	0.90
						Droughty	0.44
8D:							
Carbo	45	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.02			Depth to bedrock	0.90
						Droughty	0.44
Rock outcrop	30	Not rated		Not rated		Not rated	
8E:							
Carbo	45	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00	Depth to bedrock	0.90
						Droughty	0.44
Rock outcrop	30	Not rated		Not rated		Not rated	
9E:							
Carbo	45	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	0.86	Depth to bedrock	0.90
						Droughty	0.44
Rock outcrop	30	Not rated		Not rated		Not rated	
10C:							
Chiswell	30	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	1.00
						Slope	0.37
Litz	25	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Droughty	0.93
						Depth to bedrock	0.90
						Slope	0.37
Groseclose	20	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.37
10D:							
Chiswell	30	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
Litz	25	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50			Droughty	0.93
						Depth to bedrock	0.90

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
10D:							
Groseclose	20	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50				
10E:							
Chiswell	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
Litz	25	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00	Droughty	0.93
						Depth to bedrock	0.90
Groseclose	20	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00		
11D:							
Dekalb	75	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Slope	1.00
						Droughty	1.00
		Slope	0.50			Large stones content	0.38
11E:							
Dekalb	75	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Slope	1.00
		Large stones content	1.00			Droughty	1.00
				Slope	1.00	Large stones content	0.38
12B:							
Derroc	80	Not limited		Not limited		Somewhat limited	
						Large stones content	0.88
						Flooding	0.60
						Droughty	0.32
13D:							
Drypond	45	Very limited		Very limited		Very limited	
		Large stones content	1.00	Large stones content	1.00	Depth to bedrock	1.00
						Slope	1.00
		Slope	1.00			Droughty	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
13E:							
Drypond	45	Very limited		Very limited		Very limited	
		Slope	1.00	Large stones content	1.00	Depth to bedrock	1.00
		Large stones content	1.00			Slope	1.00
				Slope	1.00	Droughty	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
14:							
Dumps, mines	100	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
15B:							
Frederick-----------	80	Not limited		Not limited		Not limited	
15C:							
Frederick-----------	80	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.37
15D:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50				
15E:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	0.22		
15F:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00		
16B:							
Frederick-----------	80	Not limited		Not limited		Somewhat limited	
						Gravel content	0.61
16C:							
Frederick-----------	80	Not limited		Not limited		Somewhat limited	
						Gravel content	0.61
						Slope	0.37
16D:							
Frederick-----------	80	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Gravel content	0.61
16E:							
Frederick-----------	80	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
						Gravel content	0.61
17C:							
Frederick-----------	50	Not limited		Not limited		Somewhat limited	
						Slope	0.01
Urban land----------	30	Not rated		Not rated		Not rated	
18E:							
Greenlee------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.99
						Gravel content	0.02
19B:							
Ingledove-----------	80	Not limited		Not limited		Not limited	
20B:							
Ingledove-----------	50	Not limited		Not limited		Not limited	
Urban land----------	30	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
21D:							
Konnarock-----------	75	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Large stones content	0.92
						Droughty	0.91
21E:							
Konnarock-----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Large stones content	0.92
						Droughty	0.91
22B:							
Laidig--------------	75	Not limited		Not limited		Somewhat limited	
						Depth to cemented pan	0.35
						Droughty	0.11
22C:							
Laidig--------------	75	Not limited		Not limited		Somewhat limited	
						Slope	0.37
						Depth to cemented pan	0.35
						Droughty	0.11
22D:							
Laidig--------------	75	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to cemented pan	0.35
						Droughty	0.11
23C:							
Laidig--------------	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Large stones content	0.47	Large stones content	0.47	Slope	0.37
						Depth to cemented pan	0.35
						Droughty	0.11
23D:							
Laidig--------------	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.50	Large stones content	0.47	Slope	1.00
		Large stones content	0.47			Depth to cemented pan	0.35
						Droughty	0.11
24C:							
Lily----------------	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Large stones content	0.47	Large stones content	0.47	Depth to bedrock	0.46
						Slope	0.37
						Droughty	0.01
24D:							
Lily----------------	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.50	Large stones content	0.47	Slope	1.00
		Large stones content	0.47			Depth to bedrock	0.46
						Droughty	0.01

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
24E:							
Lily----------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47	Depth to bedrock	0.46
						Droughty	0.01
25A:							
Maurertown----------	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
						Flooding	0.60
26A:							
Melvin--------------	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
27D:							
Newbern-------------	40	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
		Slope	0.50			Slope	1.00
						Droughty	1.00
Westmoreland--------	35	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
27E:							
Newbern-------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Depth to bedrock	1.00
		Water erosion	1.00	Slope	1.00	Slope	1.00
						Droughty	1.00
Westmoreland--------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
28:							
Pits, quarries------	100	Not rated		Not rated		Not rated	
29C:							
Poynor--------------	75	Very limited		Very limited		Very limited	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
						Droughty	0.90
						Slope	0.37
29D:							
Poynor--------------	75	Very limited		Very limited		Very limited	
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
		Slope	0.50			Gravel content	1.00
						Droughty	0.90
29E:							
Poynor--------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Gravel content	1.00	Slope	1.00
		Gravel content	1.00	Slope	1.00	Gravel content	1.00
						Droughty	0.90

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
30F:							
Rock outcrop--------	40	Not rated		Not rated		Not rated	
Newbern-------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Depth to bedrock	1.00
		Water erosion	1.00	Slope	1.00	Slope	1.00
						Droughty	1.00
31B:							
Shelocta------------	75	Not limited		Not limited		Not limited	
31C:							
Shelocta------------	75	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.37
31D:							
Shelocta------------	75	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50				
31E:							
Shelocta------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	0.78		
32B:							
Shottower-----------	80	Not limited		Not limited		Not limited	
32C:							
Shottower-----------	80	Not limited		Not limited		Somewhat limited	
						Slope	0.37
32D:							
Shottower-----------	80	Somewhat limited		Not limited		Very limited	
		Slope	0.92			Slope	1.00
33A:							
Sindion-------------	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
						Flooding	0.60
34:							
Slickens------------	100	Not rated		Not rated		Not rated	
35A:							
Speedwell-----------	80	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
36D:							
Sylco---------------	40	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Gravel content	0.59
						Droughty	0.08
Sylvatus------------	35	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
36E:							
Sylco	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.59
						Droughty	0.08
Sylvatus	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00
37B:							
Tate	75	Not limited		Not limited		Not limited	
38B:							
Timberville	75	Not limited		Not limited		Not limited	
39B:							
Tumbling	75	Not limited		Not limited		Not limited	
39C:							
Tumbling	75	Not limited		Not limited		Somewhat limited	
						Slope	0.37
39D:							
Tumbling	75	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
39E:							
Tumbling	75	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
40C:							
Tumbling	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Large stones content	0.47	Large stones content	0.47	Slope	0.37
40D:							
Tumbling	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.50	Large stones content	0.47	Slope	1.00
		Large stones content	0.47				
40E:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.47	Large stones content	0.47		
41:							
Udorthents	45	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
42E:							
Weikert	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	1.00

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
42E:							
Berks---------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	1.00
						Droughty	0.75
43B:							
Wheeling------------	75	Not limited		Not limited		Not limited	
44B:							
Wheeling------------	50	Not limited		Not limited		Not limited	
Urban land----------	30	Not rated		Not rated		Not rated	
45A:							
Wolfgap-------------	75	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
46C:							
Wurno---------------	45	Not limited		Not limited		Somewhat limited	
						Droughty	0.56
						Depth to bedrock	0.54
						Slope	0.37
Newbern-------------	30	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
						Droughty	1.00
						Slope	0.37
46D:							
Wurno---------------	45	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Droughty	0.56
						Depth to bedrock	0.54
Newbern-------------	30	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
		Slope	0.50			Slope	1.00
						Droughty	1.00
46E:							
Wurno---------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	0.56
						Depth to bedrock	0.54
Newbern-------------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Water erosion	1.00	Depth to bedrock	1.00
		Water erosion	1.00	Slope	1.00	Slope	1.00
						Droughty	1.00
47B:							
Wyrick--------------	40	Not limited		Not limited		Not limited	
Marbie--------------	35	Not limited		Not limited		Somewhat limited	
						Depth to cemented pan	0.99
						Depth to saturated zone	0.19

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
47C:							
Wyrick	40	Not limited		Not limited		Somewhat limited	
						Slope	0.37
Marbie	35	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Depth to cemented pan	0.99
						Slope	0.37
						Depth to saturated zone	0.19
47D:							
Wyrick	40	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
Marbie	35	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50			Depth to cemented pan	0.99
						Depth to saturated zone	0.19
W:							
Water	100	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B:							
Austinville---------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
1C:							
Austinville---------	80	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50
1D:							
Austinville---------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
1E:							
Austinville---------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
2E:							
Austinville---------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Rock outcrop--------	30	Not rated		Not rated		Not rated	
3D:							
Berks---------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
Weikert-------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
4B:							
Botetourt-----------	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
						Slope	0.12
4C:							
Botetourt-----------	75	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.98	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.37	Slope	0.37	Depth to saturated zone	0.98

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
5E:							
Brushy	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.15	Depth to hard bedrock	1.00	Depth to hard bedrock	0.15
6E:							
Calvin	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
7C:							
Carbo	75	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.90	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.37	Slope	0.37	Depth to hard bedrock	0.90
7D:							
Carbo	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.90	Depth to hard bedrock	1.00	Depth to hard bedrock	0.90
8D:							
Carbo	45	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.90	Slope	1.00	Depth to hard bedrock	0.90
Rock outcrop	30	Not rated		Not rated		Not rated	
8E:							
Carbo	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.90	Depth to hard bedrock	1.00	Depth to hard bedrock	0.90
Rock outcrop	30	Not rated		Not rated		Not rated	
9E:							
Carbo	45	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.90	Slope	1.00	Depth to hard bedrock	0.90
Rock outcrop	30	Not rated		Not rated		Not rated	
10C:							
Chiswell	30	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.37	Slope	0.37	Slope	1.00

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
10C:							
Litz	25	Somewhat limited		Very limited		Very limited	
		Slope	0.37	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.06	Depth to soft bedrock	0.90	Depth to hard bedrock	0.06
				Slope	0.37		
Groseclose	20	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	0.37	Slope	0.37	Slope	1.00
10D:							
Chiswell	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
Litz	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.06	Depth to hard bedrock	1.00	Depth to hard bedrock	0.06
				Depth to soft bedrock	0.90		
Groseclose	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
10E:							
Chiswell	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
Litz	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.06	Depth to hard bedrock	1.00	Depth to hard bedrock	0.06
				Depth to soft bedrock	0.90		
Groseclose	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
11D:							
Dekalb	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.35	Depth to hard bedrock	1.00	Depth to hard bedrock	0.35
		Large stones content	0.01	Large stones content	0.01	Large stones content	0.01
11E:							
Dekalb	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.35	Depth to hard bedrock	1.00	Depth to hard bedrock	0.35
		Large stones content	0.01	Large stones content	0.01	Large stones content	0.01

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
12B:							
Derroc	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Large stones content	0.43	Large stones content	0.43	Large stones content	0.43
13D:							
Drypond	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
13E:							
Drypond	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
14:							
Dumps, mines	100	Not rated		Not rated		Not rated	
15B:							
Frederick	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
15C:							
Frederick	80	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50
15D:							
Frederick	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
15E:							
Frederick	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
15F:							
Frederick	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
16B:							
Frederick	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
16C:							
Frederick	80	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
16D:							
Frederick	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
16E:							
Frederick	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
17C:							
Frederick	50	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.01	Slope	0.01	Shrink-swell	0.50
Urban land	30	Not rated		Not rated		Not rated	
18E:							
Greenlee	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Large stones content	0.46	Large stones content	0.46	Large stones content	0.46
19B:							
Ingledove	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
						Slope	0.12
20B:							
Ingledove	50	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
						Slope	0.12
Urban land	30	Not rated		Not rated		Not rated	
21D:							
Konnarock	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Depth to hard bedrock	1.00	Depth to hard bedrock	0.71
		Large stones content	0.01	Large stones content	0.01	Large stones content	0.01
21E:							
Konnarock	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Depth to hard bedrock	1.00	Depth to hard bedrock	0.71
		Large stones content	0.01	Large stones content	0.01	Large stones content	0.01
22B:							
Laidig	75	Somewhat limited		Very limited		Somewhat limited	
		Depth to thick cemented pan	0.35	Depth to thick cemented pan	1.00	Depth to thick cemented pan	0.35
				Depth to saturated zone	0.99	Slope	0.12

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22C:							
Laidig	75	Somewhat limited		Very limited		Very limited	
		Slope	0.37	Depth to thick cemented pan	1.00	Slope	1.00
		Depth to thick cemented pan	0.35	Depth to saturated zone	0.99	Depth to thick cemented pan	0.35
				Slope	0.37		
22D:							
Laidig	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to thick cemented pan	0.35	Depth to thick cemented pan	1.00	Depth to thick cemented pan	0.35
				Depth to saturated zone	0.99		
23C:							
Laidig	75	Somewhat limited		Very limited		Very limited	
		Slope	0.37	Depth to thick cemented pan	1.00	Slope	1.00
		Depth to thick cemented pan	0.35	Depth to saturated zone	0.99	Depth to thick cemented pan	0.35
				Slope	0.37		
23D:							
Laidig	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to thick cemented pan	0.35	Depth to thick cemented pan	1.00	Depth to thick cemented pan	0.35
				Depth to saturated zone	0.99		
24C:							
Lily	75	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.37	Slope	0.37	Depth to hard bedrock	0.46
24D:							
Lily	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46
24E:							
Lily	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46
25A:							
Maurertown	75	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
26A:							
Melvin	75	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
27D:							
Newbern	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Westmoreland	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.71		
27E:							
Newbern	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Westmoreland	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.71		
28:							
Pits, quarries	100	Not rated		Not rated		Not rated	
29C:							
Poynor	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Shrink-swell	0.50	Slope	1.00
				Slope	0.37		
29D:							
Poynor	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Shrink-swell	0.50		
29E:							
Poynor	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Shrink-swell	0.50		
30F:							
Rock outcrop	40	Not rated		Not rated		Not rated	
Newbern	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
31B:							
Shelocta	75	Not limited		Not limited		Somewhat limited	
						Slope	0.12

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
31C:							
Shelocta	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
31D:							
Shelocta	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
31E:							
Shelocta	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
32B:							
Shottower	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
32C:							
Shottower	80	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50
32D:							
Shottower	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
33A:							
Sindion	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
34:							
Slickens	100	Not rated		Not rated		Not rated	
35A:							
Speedwell	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
36D:							
Sylco	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.06	Depth to hard bedrock	1.00	Depth to hard bedrock	0.06
Sylvatus	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
36E:							
Sylco	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.06	Depth to hard bedrock	1.00	Depth to hard bedrock	0.06
Sylvatus	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
37B:							
Tate	75	Not limited		Not limited		Somewhat limited	
						Slope	0.12
38B:							
Timberville	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
39B:							
Tumbling	75	Not limited		Not limited		Somewhat limited	
						Slope	0.12
39C:							
Tumbling	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
39D:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
39E:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
40C:							
Tumbling	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
40D:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
40E:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
41:							
Udorthents	45	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
42E:							
Weikert	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Berks	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
43B:							
Wheeling	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
						Slope	0.12

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
44B:							
Wheeling	50	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
						Slope	0.12
Urban land	30	Not rated		Not rated		Not rated	
45A:							
Wolfgap	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
46C:							
Wurno	45	Somewhat limited		Very limited		Very limited	
		Slope	0.37	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.20	Depth to soft bedrock	0.54	Depth to hard bedrock	0.20
				Slope	0.37		
Newbern	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.37	Slope	0.37	Slope	1.00
46D:							
Wurno	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.20	Depth to hard bedrock	1.00	Depth to hard bedrock	0.20
				Depth to soft bedrock	0.54		
Newbern	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
46E:							
Wurno	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.20	Depth to hard bedrock	1.00	Depth to hard bedrock	0.20
				Depth to soft bedrock	0.54		
Newbern	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
47B:							
Wyrick	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
Marbie	35	Somewhat limited		Very limited		Somewhat limited	
		Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
		Depth to saturated zone	0.39	Shrink-swell	0.50	Depth to saturated zone	0.39
						Slope	0.12

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
47C:							
Wyrick	40	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50
Marbie	35	Somewhat limited		Very limited		Very limited	
		Shrink-swell	0.50	Depth to saturated zone	1.00	Slope	1.00
		Depth to saturated zone	0.39	Shrink-swell	0.50	Shrink-swell	0.50
		Slope	0.37	Slope	0.37	Depth to saturated zone	0.39
47D:							
Wyrick	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Marbie	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
		Depth to saturated zone	0.39	Shrink-swell	0.50	Depth to saturated zone	0.39
W:							
Water	100	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
1B:							
Austinville---------	80	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.88		
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50				
1C:							
Austinville---------	80	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.88	Slope	0.37
		Shrink-swell	0.50	Slope	0.37		
		Frost action	0.50	Cutbanks cave	0.10		
1D:							
Austinville---------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.88		
		Shrink-swell	0.50	Cutbanks cave	0.10		
1E:							
Austinville---------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.88		
		Shrink-swell	0.50	Cutbanks cave	0.10		
2E:							
Austinville---------	45	Very limited		Very limited		Very limited	
		Low strength	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Too clayey	0.88		
		Shrink-swell	0.50	Cutbanks cave	0.10		
Rock outcrop--------	30	Not rated		Not rated		Not rated	
3D:							
Berks---------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Slope	1.00	Gravel content	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.75
Weikert-------------	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
4B:							
Botetourt-----------	75	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
		Low strength	0.78	Cutbanks cave	1.00		
		Depth to saturated zone	0.75				

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
4C:							
Botetourt	75	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
		Low strength	0.78	Cutbanks cave	1.00	Slope	0.37
		Depth to saturated zone	0.75	Slope	0.37		
5E:							
Brushy	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Gravel content	1.00
		Depth to hard bedrock	0.15	Cutbanks cave	1.00	Droughty	1.00
6E:							
Calvin	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Slope	1.00	Depth to bedrock	0.65
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.49
7C:							
Carbo	75	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.90
		Shrink-swell	1.00	Too clayey	1.00	Droughty	0.44
		Depth to hard bedrock	0.90	Slope	0.37	Slope	0.37
7D:							
Carbo	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.90
		Shrink-swell	1.00	Too clayey	1.00	Droughty	0.44
8D:							
Carbo	45	Very limited		Very limited		Very limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Shrink-swell	1.00	Too clayey	1.00	Depth to bedrock	0.90
		Slope	1.00	Slope	1.00	Droughty	0.44
Rock outcrop	30	Not rated		Not rated		Not rated	
8E:							
Carbo	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.90
		Shrink-swell	1.00	Too clayey	1.00	Droughty	0.44
Rock outcrop	30	Not rated		Not rated		Not rated	
9E:							
Carbo	45	Very limited		Very limited		Very limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Shrink-swell	1.00	Too clayey	1.00	Depth to bedrock	0.90
		Slope	1.00	Slope	1.00	Droughty	0.44

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
9E:							
Rock outcrop	30	Not rated		Not rated		Not rated	
10C:							
Chiswell	30	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Frost action	0.50	Slope	0.37	Droughty	1.00
		Slope	0.37	Cutbanks cave	0.10	Slope	0.37
Litz	25	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to hard bedrock	1.00	Droughty	0.93
		Slope	0.37	Depth to soft bedrock	0.90	Depth to bedrock	0.90
		Depth to hard bedrock	0.06	Slope	0.37	Slope	0.37
Groseclose	20	Very limited		Somewhat limited		Somewhat limited	
		Shrink-swell	1.00	Too clayey	0.88	Slope	0.37
		Low strength	1.00	Slope	0.37		
		Frost action	0.50	Cutbanks cave	0.10		
10D:							
Chiswell	30	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Depth to soft bedrock	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
Litz	25	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.93
		Depth to hard bedrock	0.06	Depth to soft bedrock	0.90	Depth to bedrock	0.90
Groseclose	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Too clayey	0.88		
		Low strength	1.00	Cutbanks cave	0.10		
10E:							
Chiswell	30	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Depth to soft bedrock	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
Litz	25	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.93
		Depth to hard bedrock	0.06	Depth to soft bedrock	0.90	Depth to bedrock	0.90
Groseclose	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Too clayey	0.88		
		Low strength	1.00	Cutbanks cave	0.10		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
11D:							
Dekalb	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.35	Slope	1.00	Droughty	1.00
		Large stones content	0.01	Cutbanks cave	0.10	Large stones content	0.38
11E:							
Dekalb	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.35	Slope	1.00	Droughty	1.00
		Large stones content	0.01	Cutbanks cave	0.10	Large stones content	0.38
12B:							
Derroc	80	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Large stones content	0.88
		Frost action	0.50	Flooding	0.60	Flooding	0.60
		Large stones content	0.43	Large stones content	0.43	Droughty	0.32
13D:							
Drypond	45	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Droughty	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
13E:							
Drypond	45	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Droughty	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
14:							
Dumps, mines	100	Not rated		Not rated		Not rated	
15B:							
Frederick	80	Very limited		Very limited		Not limited	
		Low strength	1.00	Too clayey	1.00		
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50				
15C:							
Frederick	80	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Too clayey	1.00	Slope	0.37
		Shrink-swell	0.50	Slope	0.37		
		Frost action	0.50	Cutbanks cave	0.10		
15D:							
Frederick	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	1.00		
		Shrink-swell	0.50	Cutbanks cave	0.10		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
15E:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	1.00		
		Shrink-swell	0.50	Cutbanks cave	0.10		
15F:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	1.00		
		Shrink-swell	0.50	Cutbanks cave	0.10		
16B:							
Frederick-----------	80	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Too clayey	1.00	Gravel content	0.61
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50				
16C:							
Frederick-----------	80	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Too clayey	1.00	Gravel content	0.61
		Shrink-swell	0.50	Slope	0.37	Slope	0.37
		Frost action	0.50	Cutbanks cave	0.10		
16D:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	1.00	Gravel content	0.61
		Shrink-swell	0.50	Cutbanks cave	0.10		
16E:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	1.00	Gravel content	0.61
		Shrink-swell	0.50	Cutbanks cave	0.10		
17C:							
Frederick-----------	50	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Too clayey	1.00	Slope	0.01
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50	Slope	0.01		
Urban land----------	30	Not rated		Not rated		Not rated	
18E:							
Greenlee------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Large stones content	0.46	Large stones content	0.99
		Large stones content	0.46	Cutbanks cave	0.10	Gravel content	0.02
19B:							
Ingledove-----------	80	Somewhat limited		Somewhat limited		Not limited	
		Low strength	0.78	Cutbanks cave	0.10		
		Flooding	0.40				
20B:							
Ingledove-----------	50	Somewhat limited		Somewhat limited		Not limited	
		Low strength	0.78	Cutbanks cave	0.10		
		Flooding	0.40				

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
20B:							
Urban land	30	Not rated		Not rated		Not rated	
21D:							
Konnarock	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Slope	1.00	Large stones content	0.92
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.91
21E:							
Konnarock	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Slope	1.00	Large stones content	0.92
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.91
22B:							
Laidig	75	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to thick cemented pan	1.00	Depth to cemented pan	0.35
		Depth to thick cemented pan	0.35	Depth to saturated zone	0.99	Droughty	0.11
				Cutbanks cave	0.10		
22C:							
Laidig	75	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to thick cemented pan	1.00	Slope	0.37
		Slope	0.37	Depth to saturated zone	0.99	Depth to cemented pan	0.35
		Depth to thick cemented pan	0.35	Slope	0.37	Droughty	0.11
22D:							
Laidig	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to thick cemented pan	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to cemented pan	0.35
		Depth to thick cemented pan	0.35	Depth to saturated zone	0.99	Droughty	0.11
23C:							
Laidig	75	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to thick cemented pan	1.00	Slope	0.37
		Slope	0.37	Depth to saturated zone	0.99	Depth to cemented pan	0.35
		Depth to thick cemented pan	0.35	Slope	0.37	Droughty	0.11
23D:							
Laidig	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to thick cemented pan	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to cemented pan	0.35
		Depth to thick cemented pan	0.35	Depth to saturated zone	0.99	Droughty	0.11

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
24C:							
Lily	75	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.46
		Frost action	0.50	Slope	0.37	Slope	0.37
		Depth to hard bedrock	0.46	Cutbanks cave	0.10	Droughty	0.01
24D:							
Lily	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.46
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.01
24E:							
Lily	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.46
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.01
25A:							
Maurertown	75	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Flooding	0.60	Flooding	0.60
26A:							
Melvin	75	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Frost action	1.00	Flooding	0.80	Depth to saturated zone	1.00
27D:							
Newbern	40	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50			Droughty	1.00
Westmoreland	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Depth to hard bedrock	0.71		
		Frost action	0.50	Cutbanks cave	0.10		
27E:							
Newbern	40	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50			Droughty	1.00
Westmoreland	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Depth to hard bedrock	0.71		
		Frost action	0.50	Cutbanks cave	0.10		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
28:							
Pits, quarries------	100	Not rated		Not rated		Not rated	
29C:							
Poynor--------------	75	Somewhat limited		Very limited		Very limited	
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	1.00
		Slope	0.37	Too clayey	0.92	Droughty	0.90
				Slope	0.37	Slope	0.37
29D:							
Poynor--------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	1.00
				Too clayey	0.92	Droughty	0.90
29E:							
Poynor--------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	1.00
				Too clayey	0.92	Droughty	0.90
30F:							
Rock outcrop--------	40	Not rated		Not rated		Not rated	
Newbern-------------	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
		Frost action	0.50				
31B:							
Shelocta------------	75	Somewhat limited		Somewhat limited		Not limited	
		Low strength	0.22	Cutbanks cave	0.10		
31C:							
Shelocta------------	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.37	Slope	0.37	Slope	0.37
		Low strength	0.22	Cutbanks cave	0.10		
31D:							
Shelocta------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	0.22	Cutbanks cave	0.10		
31E:							
Shelocta------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	0.22	Cutbanks cave	0.10		
32B:							
Shottower-----------	80	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Too clayey	0.50		
		Frost action	0.50	Cutbanks cave	0.10		
		Low strength	0.10				
32C:							
Shottower-----------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Too clayey	0.50	Slope	0.37
		Frost action	0.50	Slope	0.37		
		Slope	0.37	Cutbanks cave	0.10		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
32D:							
Shottower-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Too clayey	0.50		
		Frost action	0.50	Cutbanks cave	0.10		
33A:							
Sindion-------------	75	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Depth to saturated zone	0.75	Cutbanks cave	0.10		
34:							
Slickens------------	100	Not rated		Not rated		Not rated	
35A:							
Speedwell-----------	80	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Frost action	0.50	Cutbanks cave	0.10		
36D:							
Sylco---------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Gravel content	0.59
		Depth to hard bedrock	0.06	Cutbanks cave	0.10	Droughty	0.08
Sylvatus------------	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
36E:							
Sylco---------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Gravel content	0.59
		Depth to hard bedrock	0.06	Cutbanks cave	0.10	Droughty	0.08
Sylvatus------------	35	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
37B:							
Tate----------------	75	Somewhat limited		Very limited		Not limited	
		Low strength	0.78	Cutbanks cave	1.00		
		Frost action	0.50				
38B:							
Timberville---------	75	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Frost action	0.50				

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
39B:							
Tumbling	75	Somewhat limited		Somewhat limited		Not limited	
		Frost action	0.50	Cutbanks cave	0.10		
		Low strength	0.10				
39C:							
Tumbling	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Slope	0.37	Slope	0.37
		Slope	0.37	Cutbanks cave	0.10		
		Low strength	0.10				
39D:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
		Low strength	0.10				
39E:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
		Low strength	0.10				
40C:							
Tumbling	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Slope	0.37	Slope	0.37
		Slope	0.37	Cutbanks cave	0.10		
		Low strength	0.10				
40D:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
		Low strength	0.10				
40E:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
		Low strength	0.10				
41:							
Udorthents	45	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
42E:							
Weikert	40	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
		Frost action	0.50	Cutbanks cave	0.10		
Berks	35	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64			Gravel content	1.00
				Slope	1.00	Droughty	0.75
		Frost action	0.50	Cutbanks cave	0.10		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
43B:							
Wheeling------------	75	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Frost action	0.50				
		Flooding	0.40				
44B:							
Wheeling------------	50	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Frost action	0.50				
		Flooding	0.40				
Urban land----------	30	Not rated		Not rated		Not rated	
45A:							
Wolfgap-------------	75	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
		Frost action	0.50	Flooding	0.60		
46C:							
Wurno---------------	45	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to hard bedrock	1.00	Droughty	0.56
		Slope	0.37	Depth to soft bedrock	0.54	Depth to bedrock	0.54
		Depth to hard bedrock	0.20	Slope	0.37	Slope	0.37
Newbern-------------	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Frost action	0.50	Slope	0.37	Droughty	1.00
		Slope	0.37			Slope	0.37
46D:							
Wurno---------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.56
		Depth to hard bedrock	0.20	Depth to soft bedrock	0.54	Depth to bedrock	0.54
Newbern-------------	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50			Droughty	1.00
46E:							
Wurno---------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Droughty	0.56
		Depth to hard bedrock	0.20	Depth to soft bedrock	0.54	Depth to bedrock	0.54
Newbern-------------	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50			Droughty	1.00

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
47B:							
Wyrick	40	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.50		
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50				
Marbie	35	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to cemented pan	0.99
		Shrink-swell	0.50	Cutbanks cave	0.10	Depth to saturated zone	0.19
		Depth to saturated zone	0.19				
47C:							
Wyrick	40	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.50	Slope	0.37
		Shrink-swell	0.50	Slope	0.37		
		Frost action	0.50	Cutbanks cave	0.10		
Marbie	35	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to cemented pan	0.99
		Shrink-swell	0.50	Slope	0.37	Slope	0.37
		Slope	0.37	Cutbanks cave	0.10	Depth to saturated zone	0.19
47D:							
Wyrick	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.50		
		Shrink-swell	0.50	Cutbanks cave	0.10		
Marbie	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	1.00	Depth to saturated zone	1.00	Depth to cemented pan	0.99
		Shrink-swell	0.50	Cutbanks cave	0.10	Depth to saturated zone	0.19
W:							
Water	100	Not rated		Not rated		Not rated	

Table 12.—Sanitary Facilities, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1B:					
Austinville	80	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
1C:					
Austinville	80	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
1D:					
Austinville	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
1E:					
Austinville	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
2E:					
Austinville	45	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
Rock outcrop	30	Not rated		Not rated	
3D:					
Berks	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
Weikert	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	0.50
4B:					
Botetourt	75	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.50	Slope	0.68
		Flooding	0.40	Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
4C:					
Botetourt-----------	75	Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00
		Slow water movement	0.50	Depth to saturated zone	1.00
		Slope	0.37	Seepage	0.50
5E:					
Brushy--------------	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
6E:					
Calvin--------------	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
7C:					
Carbo---------------	75	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.37		
7D:					
Carbo---------------	75	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
8D:					
Carbo---------------	45	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop--------	30	Not rated		Not rated	
8E:					
Carbo---------------	45	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop--------	30	Not rated		Not rated	
9E:					
Carbo---------------	45	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
9E:					
Rock outcrop	30	Not rated		Not rated	
10C:					
Chiswell	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.37	Slope	1.00
				Seepage	0.50
Litz	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slow water movement	0.50	Depth to soft bedrock	1.00
		Slope	0.37	Slope	1.00
Groseclose	20	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Slope	0.37		
10D:					
Chiswell	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	0.50
Litz	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
Groseclose	20	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Slope	1.00		
10E:					
Chiswell	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	0.50
Litz	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
Groseclose	20	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Slope	1.00		

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
11D:					
Dekalb--------------	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
11E:					
Dekalb--------------	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
12B:					
Derroc--------------	80	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage	1.00	Seepage	1.00
		Filtering capacity	1.00	Large stones content	0.91
13D:					
Drypond-------------	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
Rock outcrop--------	30	Not rated		Not rated	
13E:					
Drypond-------------	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
Rock outcrop--------	30	Not rated		Not rated	
14:					
Dumps, mines--------	100	Not rated		Not rated	
15B:					
Frederick-----------	80	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
15C:					
Frederick-----------	80	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
15D:					
Frederick-----------	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
15E:					
Frederick-----------	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
15F:					
Frederick-----------	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
16B:					
Frederick-----------	80	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
16C:					
Frederick-----------	80	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
				Seepage	0.50
		Slope	0.37		
16D:					
Frederick-----------	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
16E:					
Frederick-----------	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
17C:					
Frederick-----------	50	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
				Seepage	0.50
		Slope	0.01		
Urban land----------	30	Not rated		Not rated	
18E:					
Greenlee------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
		Large stones content	0.46	Large stones content	0.99
19B:					
Ingledove-----------	80	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
		Flooding	0.40	Flooding	0.40
20B:					
Ingledove-----------	50	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
		Flooding	0.40	Flooding	0.40

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
20B:					
Urban land	30	Not rated		Not rated	
21D:					
Konnarock	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
21E:					
Konnarock	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
22B:					
Laidig	75	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Seepage	1.00
				Slope	0.68
22C:					
Laidig	75	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	0.37	Seepage	1.00
22D:					
Laidig	75	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	1.00	Seepage	1.00
23C:					
Laidig	75	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	0.37	Seepage	1.00
23D:					
Laidig	75	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	1.00	Seepage	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
24C:					
Lily----------------	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Slope	1.00
		Slope	0.37	Seepage	1.00
24D:					
Lily----------------	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
24E:					
Lily----------------	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
25A:					
Maurertown----------	75	Very limited		Very limited	
		Flooding	1.00	Ponding	1.00
		Slow water movement	1.00	Flooding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
26A:					
Melvin--------------	75	Very limited		Very limited	
		Flooding	1.00	Ponding	1.00
		Ponding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
27D:					
Newbern-------------	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Westmoreland--------	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Depth to bedrock	0.89	Depth to hard bedrock	0.71
		Slow water movement	0.50	Seepage	0.50
27E:					
Newbern-------------	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Westmoreland--------	35	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Depth to bedrock	0.89	Depth to hard bedrock	0.71
		Slow water movement	0.50	Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
28:					
Pits, quarries------	100	Not rated		Not rated	
29C:					
Poynor--------------	75	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
				Seepage	1.00
		Slope	0.37		
29D:					
Poynor--------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
29E:					
Poynor--------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
30F:					
Rock outcrop--------	40	Not rated		Not rated	
Newbern-------------	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00		
				Slope	1.00
31B:					
Shelocta------------	75	Very limited		Very limited	
		Seepage	1.00	Seepage	1.00
		Slow water movement	0.50	Slope	0.68
31C:					
Shelocta------------	75	Very limited		Very limited	
		Seepage	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	1.00
		Slope	0.37		
31D:					
Shelocta------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
		Slow water movement	0.50		
31E:					
Shelocta------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
		Slow water movement	0.50		
32B:					
Shottower-----------	80	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
32C:					
Shottower	80	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
32D:					
Shottower	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
33A:					
Sindion	75	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00
34:					
Slickens	100	Not rated		Not rated	
35A:					
Speedwell	80	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage	1.00	Seepage	1.00
		Slow water movement	0.50		
36D:					
Sylco	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
Sylvatus	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
36E:					
Sylco	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
Sylvatus	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
37B:					
Tate	75	Very limited		Very limited	
		Seepage	1.00	Seepage	1.00
		Slow water movement	0.50	Slope	0.68

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
38B:					
Timberville---------	75	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Seepage	0.50
				Flooding	0.40
		Flooding	0.40	Slope	0.32
39B:					
Tumbling------------	75	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
39C:					
Tumbling------------	75	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
				Seepage	0.50
		Slope	0.37		
39D:					
Tumbling------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
39E:					
Tumbling------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
40C:					
Tumbling------------	75	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
				Seepage	0.50
		Slope	0.37		
40D:					
Tumbling------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
40E:					
Tumbling------------	75	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
41:					
Udorthents----------	45	Not rated		Not rated	
Urban land----------	30	Not rated		Not rated	
42E:					
Weikert-------------	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00		
		Seepage	1.00	Slope	1.00
				Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
42E:					
Berks	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
43B:					
Wheeling	75	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
		Flooding	0.40	Flooding	0.40
44B:					
Wheeling	50	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
		Flooding	0.40	Flooding	0.40
Urban land	30	Not rated		Not rated	
45A:					
Wolfgap	75	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage	1.00	Seepage	1.00
		Slow water movement	0.50		
46C:					
Wurno	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slow water movement	0.50	Depth to soft bedrock	1.00
		Slope	0.37	Slope	1.00
Newbern	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.37	Slope	1.00
46D:					
Wurno	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00		
		Slow water movement	0.50	Depth to soft bedrock	1.00
				Slope	1.00
Newbern	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
46E:					
Wurno	45	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00		
		Slow water movement	0.50	Depth to soft bedrock	1.00
				Slope	1.00

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
46E:					
Newbern	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
47B:					
Wyrick	40	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
Marbie	35	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.75
				Slope	0.68
47C:					
Wyrick	40	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
Marbie	35	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	0.37	Depth to saturated zone	0.75
47D:					
Wyrick	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
Marbie	35	Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zoned	0.75
W:					
Water	100	Not rated		Not rated	

Table 12.—Sanitary Facilities, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B:							
Austinville	80	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
1C:							
Austinville	80	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.37	Too clayey	1.00
		Slope	0.37			Hard to compact	1.00
						Slope	0.37
1D:							
Austinville	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
1E:							
Austinville	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
2E:							
Austinville	45	Very limited		Very limited		Very limited	
		Too clayey	1.00	Slope	1.00	Too clayey	1.00
		Slope	1.00			Hard to compact	1.00
						Slope	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
3D:							
Berks	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	0.97
Weikert	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00			Gravel content	1.00
4B:							
Botetourt	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				
4C:							
Botetourt	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
5E:							
Brushy	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	0.50			Gravel content	1.00
6E:							
Calvin	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	0.97
7C:							
Carbo	75	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	0.37	Too clayey	1.00
		Slope	0.37			Hard to compact	1.00
7D:							
Carbo	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
8D:							
Carbo	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	1.00	Too clayey	1.00
		Slope	1.00			Hard to compact	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
8E:							
Carbo	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
9E:							
Carbo	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	1.00	Too clayey	1.00
		Slope	1.00			Hard to compact	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
10C:							
Chiswell	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.37	Slope	0.37	Gravel content	0.83
						Slope	0.37
Litz	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.37	Slope	0.37	Gravel content	0.99
						Slope	0.37

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10C:							
Groseclose	20	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.37	Too clayey	1.00
		Slope	0.37			Hard to compact	1.00
						Slope	0.37
10D:							
Chiswell	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.83
Litz	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.99
Groseclose	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
10E:							
Chiswell	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.83
Litz	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.99
Groseclose	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
11D:							
Dekalb	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
		Seepage	1.00	Depth to bedrock	1.00	Seepage	1.00
11E:							
Dekalb	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
		Seepage	1.00	Depth to bedrock	1.00	Seepage	1.00
12B:							
Derroc	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00	Large stones content	0.89
		Large stones content	0.89			Too sandy	0.50

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
13D:							
Drypond	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00			Seepage	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
13E:							
Drypond	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00			Seepage	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
14:							
Dumps, mines	100	Not rated		Not rated		Not rated	
15B:							
Frederick	80	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
15C:							
Frederick	80	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.37	Too clayey	1.00
		Slope	0.37			Hard to compact	1.00
						Slope	0.37
15D:							
Frederick	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
15E:							
Frederick	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
15F:							
Frederick	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
16B:							
Frederick	80	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
16C:							
Frederick	80	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.37	Too clayey	1.00
		Slope	0.37			Hard to compact	1.00
						Slope	0.37

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
16D:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
16E:							
Frederick-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
17C:							
Frederick-----------	50	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.01	Too clayey	1.00
		Slope	0.01			Hard to compact	1.00
						Slope	0.01
Urban land----------	30	Not rated		Somewhat limited		Not rated	
				Slope	0.01		
18E:							
Greenlee------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Large stones content	0.85
		Large stones content	0.85			Seepage	0.50
19B:							
Ingledove-----------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				
20B:							
Ingledove-----------	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				
Urban land----------	30	Not rated		Not limited		Not rated	
21D:							
Konnarock-----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	0.85
21E:							
Konnarock-----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	0.85
22B:							
Laidig--------------	75	Very limited		Very limited		Very limited	
		Depth to thick cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	0.86	Seepage	1.00	Depth to saturated zone	0.47
				Depth to saturated zone	0.19	Seepage	0.21

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22C:							
Laidig	75	Very limited		Very limited		Very limited	
		Depth to thick cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	0.86	Seepage	1.00	Depth to saturated zone	0.47
				Slope	0.37		
		Slope	0.37			Slope	0.37
22D:							
Laidig	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to thick cemented pan	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.86	Seepage	1.00	Depth to saturated zone	0.47
23C:							
Laidig	75	Very limited		Very limited		Very limited	
		Depth to thick cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	0.86	Seepage	1.00	Depth to saturated zone	0.47
				Slope	0.37		
		Slope	0.37		0.37	Slope	0.37
23D:							
Laidig	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to thick cemented pan	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.86	Seepage	1.00	Depth to saturated zone	0.47
24C:							
Lily	75	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
24D:							
Lily	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
24E:							
Lily	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
25A:							
Maurertown	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
				Depth to saturated zone	1.00		
		Ponding	1.00			Too clayey	1.00

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
26A:							
Melvin	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00		
27D:							
Newbern	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.01
Westmoreland	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.71	Depth to bedrock	0.71
		Too clayey	0.50			Too clayey	0.50
27E:							
Newbern	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.01
Westmoreland	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.71	Depth to bedrock	0.71
		Too clayey	0.50			Too clayey	0.50
28:							
Pits, quarries	100	Not rated		Not rated		Not rated	
29C:							
Poynor	75	Very limited		Very limited		Very limited	
		Too clayey	1.00	Seepage	1.00	Too clayey	1.00
		Slope	0.37	Slope	0.37	Hard to compact	1.00
						Gravel content	0.75
29D:							
Poynor	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00	Seepage	1.00	Too clayey	1.00
						Hard to compact	1.00
29E:							
Poynor	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00	Seepage	1.00	Too clayey	1.00
						Hard to compact	1.00
30F:							
Rock outcrop	40	Not rated		Not rated		Not rated	
Newbern	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.01

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
31B:							
Shelocta	75	Very limited		Not limited		Not limited	
		Seepage	1.00				
31C:							
Shelocta	75	Very limited		Somewhat limited		Somewhat limited	
		Seepage	1.00	Slope	0.37	Slope	0.37
		Slope	0.37				
31D:							
Shelocta	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00				
31E:							
Shelocta	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00				
32B:							
Shottower	80	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
32C:							
Shottower	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37
32D:							
Shottower	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
33A:							
Sindion	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Seepage	1.00				
34:							
Slickens	100	Not rated		Not rated		Not rated	
35A:							
Speedwell	80	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
		Seepage	1.00				
36D:							
Sylco	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.99
Sylvatus	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	1.00

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
36E:							
Sylco	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.99
Sylvatus	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	1.00
37B:							
Tate	75	Very limited		Not limited		Somewhat limited	
		Seepage	1.00			Too clayey	0.50
		Too clayey	0.50				
38B:							
Timberville	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				
39B:							
Tumbling	75	Somewhat limited		Not limited		Not limited	
		Too clayey	0.50				
39C:							
Tumbling	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Slope	0.37
		Slope	0.37				
39D:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50				
39E:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50				
40C:							
Tumbling	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Slope	0.37
		Slope	0.37				
40D:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50				
40E:							
Tumbling	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50				
41:							
Udorthents	45	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
42E:							
Weikert	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00			Gravel content	1.00
Berks	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	0.97
43B:							
Wheeling	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				
44B:							
Wheeling	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				
Urban land	30	Not rated		Not rated		Not rated	
45A:							
Wolfgap	75	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
		Seepage	1.00				
46C:							
Wurno	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.37	Slope	0.37	Gravel content	1.00
						Slope	0.37
Newbern	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.37	Slope	0.37	Slope	0.37
						Gravel content	0.01
46D:							
Wurno	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	1.00
Newbern	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.01
46E:							
Wurno	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	1.00
Newbern	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.01

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
47B:							
Wyrick	40	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
Marbie	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	0.99	Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Depth to saturated zone	0.75	Depth to saturated zone	0.86
47C:							
Wyrick	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37
Marbie	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	0.99	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slope	0.37	Depth to saturated zone	0.75	Depth to saturated zone	0.86
				Slope	0.37	Slope	0.37
47D:							
Wyrick	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
Marbie	35	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Depth to saturated zone	0.99	Slope	1.00	Slope	1.00
				Depth to saturated zone	0.75	Depth to saturated zone	0.86
W:							
Water	100	Not rated		Not rated		Not rated	

Table 13.—Construction Materials, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
1B:					
Austinville---------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
1C:					
Austinville---------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
1D:					
Austinville---------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
1E:					
Austinville---------	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
2E:					
Austinville---------	45	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Rock outcrop--------	30	Not rated		Not rated	
3D:					
Berks---------------	40	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.38	Thickest layer	0.00
Weikert-------------	35	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.50	Thickest layer	0.00
4B:					
Botetourt-----------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
4C:					
Botetourt-----------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
5E:					
Brushy--------------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
6E:					
Calvin	75	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.20	Thickest layer	0.00
7C:					
Carbo	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
7D:					
Carbo	75	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
8D:					
Carbo	45	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Rock outcrop	30	Not rated		Not rated	
8E:					
Carbo	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	30	Not rated		Not rated	
9E:					
Carbo	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	30	Not rated		Not rated	
10C:					
Chiswell	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Litz	25	Fair		Poor	
		Thickest layer	0.01	Bottom layer	0.00
		Bottom layer	0.32	Thickest layer	0.00
Groseclose	20	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
10D:					
Chiswell	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Litz	25	Fair		Poor	
		Thickest layer	0.01	Bottom layer	0.00
		Bottom layer	0.32	Thickest layer	0.00
Groseclose	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
10E:					
Chiswell------------	30	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Litz----------------	25	Fair		Poor	
		Thickest layer	0.01	Bottom layer	0.00
		Bottom layer	0.32	Thickest layer	0.00
Groseclose----------	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
11D:					
Dekalb--------------	75	Fair		Fair	
		Thickest layer	0.00	Bottom layer	0.03
		Bottom layer	0.14	Thickest layer	0.04
11E:					
Dekalb--------------	75	Fair		Fair	
		Thickest layer	0.00	Bottom layer	0.03
		Bottom layer	0.14	Thickest layer	0.04
12B:					
Derroc--------------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
13D:					
Drypond-------------	45	Fair		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.30	Bottom layer	0.03
Rock outcrop--------	30	Not rated		Not rated	
13E:					
Drypond-------------	45	Fair		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.30	Bottom layer	0.03
Rock outcrop--------	30	Not rated		Not rated	
14:					
Dumps, mines--------	100	Not rated		Not rated	
15B:					
Frederick-----------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
15C:					
Frederick-----------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
15D:					
Frederick-----------	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
15E:					
Frederick-----------	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
15F:					
Frederick-----------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
16B:					
Frederick-----------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
16C:					
Frederick-----------	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
16D:					
Frederick-----------	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
16E:					
Frederick-----------	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
17C:					
Frederick-----------	50	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Urban land----------	30	Not rated		Not rated	
18E:					
Greenlee------------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
19B:					
Ingledove-----------	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
20B:					
Ingledove-----------	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Urban land----------	30	Not rated		Not rated	
21D:					
Konnarock-----------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
21E:					
Konnarock-----------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
22B:					
Laidig--------------	75	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.04
22C:					
Laidig--------------	75	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.04
22D:					
Laidig--------------	75	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.04
23C:					
Laidig--------------	75	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.04
23D:					
Laidig--------------	75	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.04
24C:					
Lily----------------	75	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.03
24D:					
Lily----------------	75	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
24E:					
Lily----------------	75	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
25A:					
Maurertown----------	75	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
26A:					
Melvin--------------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
27D:					
Newbern-------------	40	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
27D:					
Westmoreland--------	35	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.38	Thickest layer	0.00
27E:					
Newbern-------------	40	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Westmoreland--------	35	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.38	Thickest layer	0.00
28:					
Pits, quarries------	100	Not rated		Not rated	
29C:					
Poynor--------------	75	Fair		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.25	Thickest layer	0.00
29D:					
Poynor--------------	75	Fair		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.25	Thickest layer	0.00
29E:					
Poynor--------------	75	Fair		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.25	Thickest layer	0.00
30F:					
Rock outcrop--------	40	Not rated		Not rated	
Newbern-------------	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
31B:					
Shelocta------------	75	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
31C:					
Shelocta------------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
31D:					
Shelocta------------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
31E:					
Shelocta------------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
32B:					
Shottower-----------	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
32C:					
Shottower-----------	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
32D:					
Shottower-----------	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
33A:					
Sindion-------------	75	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
34:					
Slickens------------	100	Not rated		Not rated	
35A:					
Speedwell-----------	80	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
36D:					
Sylco---------------	40	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.12	Thickest layer	0.00
Sylvatus------------	35	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.38	Thickest layer	0.00
36E:					
Sylco---------------	40	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.12	Thickest layer	0.00
Sylvatus------------	35	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.38	Thickest layer	0.00
37B:					
Tate----------------	75	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.10
38B:					
Timberville---------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
39B:					
Tumbling------------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
39C:					
Tumbling------------	75	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
39D:					
Tumbling------------	75	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
39E:					
Tumbling------------	75	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
40C:					
Tumbling------------	75	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
40D:					
Tumbling------------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
40E:					
Tumbling------------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
41:					
Udorthents----------	45	Not rated		Not rated	
Urban land----------	30	Not rated		Not rated	
42E:					
Weikert-------------	40	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.50	Thickest layer	0.00
Berks---------------	35	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.38	Thickest layer	0.00
43B:					
Wheeling------------	75	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
44B:					
Wheeling------------	50	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
Urban land----------	30	Not rated		Not rated	
45A:					
Wolfgap-------------	75	Fair		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.18	Bottom layer	0.02

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
46C:					
Wurno	45	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Newbern	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
46D:					
Wurno	45	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Newbern	30	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
46E:					
Wurno	45	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.25	Thickest layer	0.00
Newbern	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
47B:					
Wyrick	40	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Marbie	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
47C:					
Wyrick	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Marbie	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
47D:					
Wyrick	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Marbie	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
W:					
Water	100	Not rated		Not rated	

Table 13.—Construction Materials, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
1B:							
Austinville	80	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.76
		Too acid	0.50				
1C:							
Austinville	80	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Slope	0.63
						Too acid	0.76
		Too acid	0.50				
1D:							
Austinville	80	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.00
				Shrink-swell	0.87	Too acid	0.75
		Too acid	0.50				
1E:							
Austinville	80	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.87	Too acid	0.76
		Too acid	0.50				
2E:							
Austinville	45	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
				Shrink-swell	0.87	Too acid	0.76
		Too acid	0.50				
Rock outcrop	30	Not rated		Not rated		Not rated	
3D:							
Berks	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
						Depth to bedrock	0.35
		Depth to bedrock	0.35				
Weikert	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.00
4B:							
Botetourt	75	Fair		Fair		Fair	
		Organic matter content low	0.12	Wetness depth	0.14	Wetness depth	0.14
				Low strength	0.22	Hard to reclaim (rock fragments)	0.68
		Too acid	0.46				
		Water erosion	0.99				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
4C:							
Botetourt-----------	75	Fair		Fair		Fair	
		Organic matter content low	0.12	Wetness depth	0.14	Wetness depth	0.14
		Too acid	0.46	Low strength	0.22	Slope	0.63
		Water erosion	0.99			Hard to reclaim (rock fragments)	0.68
5E:							
Brushy--------------	75	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.76
6E:							
Calvin--------------	75	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Depth to bedrock	0.35			Depth to bedrock	0.35
7C:							
Carbo---------------	75	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.00	Low strength	0.00	Depth to bedrock	0.10
		Depth to bedrock	0.10	Shrink-swell	0.12	Slope	0.63
7D:							
Carbo---------------	75	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.00	Low strength	0.00	Too clayey	0.00
		Depth to bedrock	0.10	Shrink-swell	0.12	Depth to bedrock	0.10
8D:							
Carbo---------------	45	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.00	Low strength	0.00	Slope	0.00
		Depth to bedrock	0.10	Shrink-swell	0.12	Depth to bedrock	0.10
Rock outcrop--------	30	Not rated		Not rated		Not rated	
8E:							
Carbo---------------	45	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.00	Slope	0.00	Too clayey	0.00
		Depth to bedrock	0.10	Low strength	0.00	Depth to bedrock	0.10
Rock outcrop--------	30	Not rated		Not rated		Not rated	
9E:							
Carbo---------------	45	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.00	Low strength	0.00	Slope	0.00
		Depth to bedrock	0.10	Slope	0.00	Depth to bedrock	0.10
Rock outcrop--------	30	Not rated		Not rated		Not rated	
10C:							
Chiswell------------	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Depth to bedrock	0.00			Depth to bedrock	0.00
		Organic matter content low	0.12			Slope	0.63

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
10C:							
Litz	25	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Depth to bedrock	0.10			Depth to bedrock	0.10
		Organic matter content low	0.12			Slope	0.63
Groseclose	20	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.12	Slope	0.63
		Too acid	0.46			Too acid	0.95
10D:							
Chiswell	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.50	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.00
Litz	25	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.10	Slope	0.50	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.10
Groseclose	20	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Shrink-swell	0.12	Too clayey	0.00
				Slope	0.50	Too acid	0.95
		Too acid	0.46				
10E:							
Chiswell	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.00
Litz	25	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.10	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.10
Groseclose	20	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.12	Too acid	0.95
		Too acid	0.46				
11D:							
Dekalb	75	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Rock fragments	0.00
				Cobble content	0.91	Depth to bedrock	0.65
		Too acid	0.50				
11E:							
Dekalb	75	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
				Cobble content	0.91	Depth to bedrock	0.65
		Too acid	0.50				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
12B:							
Derroc	80	Fair		Poor		Poor	
		Cobble content	0.12	Cobble content	0.00	Hard to reclaim (rock fragments)	0.00
		Organic matter content low	0.12			Rock fragments	0.00
		Droughty	0.42				
13D:							
Drypond	45	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.00
Rock outcrop	30	Not rated		Not rated		Not rated	
13E:							
Drypond	45	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.00
Rock outcrop	30	Not rated		Not rated		Not rated	
14:							
Dumps, mines	100	Not rated		Not rated		Not rated	
15B:							
Frederick	80	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.98
		Too acid	0.54				
15C:							
Frederick	80	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Slope	0.63
						Too acid	0.98
		Too acid	0.54				
15D:							
Frederick	80	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.00
				Shrink-swell	0.87	Too acid	0.98
		Too acid	0.54				
15E:							
Frederick	80	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.87	Too acid	0.98
		Too acid	0.54				
15F:							
Frederick	80	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.87	Too acid	0.98
		Too acid	0.54				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
16B:							
Frederick-----------	80	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.98
		Too acid	0.54				
16C:							
Frederick-----------	80	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Slope	0.63
						Too acid	0.98
		Too acid	0.54				
16D:							
Frederick-----------	80	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.00
				Shrink-swell	0.87	Too acid	0.98
		Too acid	0.54				
16E:							
Frederick-----------	80	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.87	Too acid	0.98
		Too acid	0.54				
17C:							
Frederick-----------	50	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.98
		Too acid	0.54				
Urban land----------	30	Not rated		Not rated		Not rated	
18E:							
Greenlee------------	75	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
				Cobble content	0.00	Hard to reclaim (rock fragments)	0.00
		Cobble content	0.39				
		Too acid	0.46			Rock fragments	0.00
19B:							
Ingledove-----------	80	Fair		Fair		Good	
		Organic matter content low	0.12	Low strength	0.22		
		Too acid	0.97				
20B:							
Ingledove-----------	50	Fair		Fair		Good	
		Organic matter content low	0.12	Low strength	0.22		
		Too acid	0.97				
Urban land----------	30	Not rated		Not rated		Not rated	
21D:							
Konnarock-----------	75	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.29	Slope	0.00	Rock fragments	0.00
		Too acid	0.50	Cobble content	0.89	Depth to bedrock	0.29

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
21E:							
Konnarock-----------	75	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.29	Slope	0.00	Rock fragments	0.00
		Too acid	0.50	Cobble content	0.89	Depth to bedrock	0.29
22B:							
Laidig--------------	75	Fair		Poor		Fair	
		Droughty	0.07	Depth to cemented pan	0.00	Too acid	0.59
		Organic matter content low	0.12	Wetness depth	0.89	Depth to cemented pan	0.65
		Too acid	0.50			Rock fragments	0.88
22C:							
Laidig--------------	75	Fair		Poor		Fair	
		Droughty	0.07	Depth to cemented pan	0.00	Too acid	0.59
		Organic matter content low	0.12	Wetness depth	0.89	Slope	0.63
		Too acid	0.50			Depth to cemented pan	0.65
22D:							
Laidig--------------	75	Fair		Poor		Poor	
		Droughty	0.07	Depth to cemented pan	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too acid	0.59
		Too acid	0.50	Wetness depth	0.89	Depth to cemented pan	0.65
23C:							
Laidig--------------	75	Fair		Poor		Fair	
		Droughty	0.07	Depth to cemented pan	0.00	Too acid	0.59
		Organic matter content low	0.12	Wetness depth	0.89	Slope	0.63
		Too acid	0.50			Depth to cemented pan	0.65
23D:							
Laidig--------------	75	Fair		Poor		Poor	
		Droughty	0.07	Depth to cemented pan	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too acid	0.59
		Too acid	0.50	Wetness depth	0.89	Depth to cemented	0.65
24C:							
Lily----------------	75	Fair		Poor		Fair	
		Organic matter content low	0.12	Depth to bedrock	0.00	Too clayey	0.48
		Droughty	0.20	Low strength	0.00	Depth to bedrock	0.54
		Too acid	0.50			Too acid	0.59
24D:							
Lily----------------	75	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.20	Low strength	0.00	Too clayey	0.48
		Too acid	0.50	Slope	0.50	Depth to bedrock	0.54
24E:							
Lily----------------	75	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.50	Slope	0.00	Too clayey	0.48
		Too acid	0.50	Low strength	0.00	Depth to bedrock	0.54

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
25A:							
Maurertown----------	75	Poor		Poor		Poor	
		Too clayey	0.00	Wetness depth	0.00	Wetness depth	0.00
		Organic matter content low	0.88	Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.17		
		Water erosion	0.90				
26A:							
Melvin--------------	75	Fair		Poor		Poor	
		Water erosion	0.68	Wetness depth	0.00	Wetness depth	0.00
		Organic matter content low	0.68	Low strength	0.00		
27D:							
Newbern-------------	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.50	Depth to bedrock	0.00
		Organic matter content low	0.12			Rock fragments	0.00
Westmoreland--------	35	Fair		Poor		Poor	
		Organic matter content low	0.12	Low strength	0.00	Slope	0.00
				Depth to bedrock	0.29	Hard to reclaim (rock fragments)	0.00
		Too acid	0.84	Slope	0.50		
						Rock fragments	0.82
27E:							
Newbern-------------	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
		Organic matter content low	0.12			Rock fragments	0.00
Westmoreland--------	35	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
				Low strength	0.00	Hard to reclaim (rock fragments)	0.00
		Too acid	0.84	Depth to bedrock	0.29		
						Rock fragments	0.82
28:							
Pits, quarries------	100	Not rated		Not rated		Not rated	
29C:							
Poynor--------------	75	Fair		Poor		Poor	
		Organic matter content low	0.12	Low strength	0.00	Rock fragments	0.00
				Shrink-swell	0.99	Slope	0.63
		Too acid	0.50			Too acid	0.76
		Droughty	0.76				
29D:							
Poynor--------------	75	Fair		Poor		Poor	
		Organic matter content low	0.12	Low strength	0.00	Slope	0.00
				Slope	0.50	Rock fragments	0.00
		Too acid	0.50	Shrink-swell	0.99	Too acid	0.76
		Droughty	0.76				
29E:							
Poynor--------------	75	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
				Low strength	0.00	Rock fragments	0.00
		Too acid	0.50	Shrink-swell	0.99	Too acid	0.76
		Droughty	0.76				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
30F:							
Rock outcrop--------	40	Not rated		Not rated		Not rated	
Newbern-------------	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
		Organic matter content low	0.12			Rock fragments	0.00
31B:							
Shelocta------------	75	Fair		Fair		Fair	
		Organic matter content low	0.12	Low strength	0.78	Hard to reclaim (rock fragments)	0.88
		Too acid	0.46			Too acid	0.95
		Water erosion	0.90				
31C:							
Shelocta------------	75	Fair		Fair		Fair	
		Organic matter content low	0.12	Low strength	0.78	Slope	0.63
		Too acid	0.46			Hard to reclaim (rock fragments)	0.88
		Water erosion	0.90			Too acid	0.95
31D:							
Shelocta------------	75	Fair		Fair		Poor	
		Organic matter content low	0.12	Slope	0.50	Slope	0.00
		Too acid	0.46	Low strength	0.78	Hard to reclaim (rock fragments)	0.88
		Water erosion	0.90			Too acid	0.95
31E:							
Shelocta------------	75	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
		Too acid	0.46	Low strength	0.78	Hard to reclaim (rock fragments)	0.88
		Water erosion	0.90			Too acid	0.95
32B:							
Shottower-----------	80	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.89	Rock fragments	0.82
		Too acid	0.50			Too acid	0.95
32C:							
Shottower-----------	80	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.89	Slope	0.63
		Too acid	0.50			Rock fragments	0.82
32D:							
Shottower-----------	80	Poor		Fair		Poor	
		Too clayey	0.00	Slope	0.08	Slope	0.00
		Organic matter content low	0.12	Low strength	0.10	Too clayey	0.00
		Too acid	0.50	Shrink-swell	0.89	Rock fragments	0.82
33A:							
Sindion-------------	75	Good		Fair		Fair	
				Wetness depth	0.14	Wetness depth	0.14
34:							
Slickens------------	100	Not rated		Not rated		Not rated	

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
35A:							
Speedwell	80	Good		Good		Good	
36D:							
Sylco	40	Fair		Poor		Poor	
		Droughty	0.09	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.59
Sylvatus	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.00
36E:							
Sylco	40	Fair		Poor		Poor	
		Droughty	0.09	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Too acid	0.50			Too acid	0.59
Sylvatus	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.00
37B:							
Tate	75	Fair		Fair		Fair	
		Organic matter content low	0.12	Low strength	0.22	Hard to reclaim (rock fragments)	0.39
		Too acid	0.46			Too acid	0.95
38B:							
Timberville	75	Fair		Poor		Fair	
		Too clayey	0.08	Low strength	0.00	Too clayey	0.05
		Organic matter content low	0.12	Shrink-swell	0.98		
		Too acid	0.84				
39B:							
Tumbling	75	Fair		Fair		Fair	
		Too clayey	0.08	Low strength	0.10	Too clayey	0.05
		Organic matter content low	0.12			Too acid	0.95
		Too acid	0.46				
39C:							
Tumbling	75	Fair		Fair		Fair	
		Too clayey	0.08	Low strength	0.10	Too clayey	0.05
		Organic matter content low	0.12			Slope	0.63
		Too acid	0.46			Too acid	0.95
39D:							
Tumbling	75	Fair		Fair		Poor	
		Too clayey	0.08	Low strength	0.10	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.05
		Too acid	0.46			Too acid	0.95

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
39E:							
Tumbling	75	Fair		Poor		Poor	
		Too clayey	0.08	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.10	Too clayey	0.05
		Too acid	0.46			Too acid	0.95
40C:							
Tumbling	75	Fair		Fair		Fair	
		Too clayey	0.08	Low strength	0.10	Too clayey	0.05
		Organic matter content low	0.12			Slope	0.63
		Too acid	0.46			Too acid	0.95
40D:							
Tumbling	75	Fair		Fair		Poor	
		Too clayey	0.08	Low strength	0.10	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.05
		Too acid	0.46			Too acid	0.95
40E:							
Tumbling	75	Fair		Poor		Poor	
		Too clayey	0.08	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.10	Too clayey	0.05
		Too acid	0.46			Too acid	0.95
41:							
Udorthents	45	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
42E:							
Weikert	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.00
Berks	35	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Depth to bedrock	0.35			Depth to bedrock	0.35
43B:							
Wheeling	75	Fair		Poor		Good	
		Organic matter content low	0.12	Low strength	0.00		
		Too acid	0.74				
44B:							
Wheeling	50	Fair		Poor		Good	
		Organic matter content low	0.12	Low strength	0.00		
		Too acid	0.74				
Urban land	30	Not rated		Not rated		Not rated	
45A:							
Wolfgap	75	Good		Good		Good	

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
46C:							
Wurno	45	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
		Organic matter content low	0.12			Depth to bedrock	0.46
		Depth to bedrock	0.46			Slope	0.63
Newbern	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00			Rock fragments	0.00
		Organic matter content low	0.12			Slope	0.63
46D:							
Wurno	45	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Rock fragments	0.00
		Depth to bedrock	0.46			Depth to bedrock	0.46
Newbern	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.50	Depth to bedrock	0.00
		Organic matter content low	0.12			Rock fragments	0.00
46E:							
Wurno	45	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.00	Rock fragments	0.00
		Depth to bedrock	0.46			Depth to bedrock	0.46
Newbern	30	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
		Organic matter content low	0.12			Rock fragments	0.00
47B:							
Wyrick	40	Fair		Poor		Fair	
		Too acid	0.12	Low strength	0.00	Too acid	0.59
		Organic matter content low	0.12	Shrink-swell	0.87		
		Water erosion	0.90				
Marbie	35	Fair		Poor		Fair	
		Depth to cemented pan	0.01	Depth to cemented pan	0.00	Hard to reclaim (dense layer)	0.01
		Too acid	0.12	Wetness depth	0.53	Depth to cemented pan	0.01
		Droughty	0.47	Shrink-swell	0.92	Wetness depth	0.53
47C:							
Wyrick	40	Fair		Poor		Fair	
		Too acid	0.12	Low strength	0.00	Too acid	0.59
		Organic matter content low	0.12	Shrink-swell	0.87	Slope	0.63
		Water erosion	0.90				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
47C:							
Marbie	35	Fair		Poor		Fair	
		Depth to cemented pan	0.01	Depth to cemented pan	0.00	Hard to reclaim (dense layer)	0.01
		Too acid	0.12	Wetness depth	0.53	Depth to cemented pan	0.01
		Droughty	0.47	Shrink-swell	0.92	Wetness depth	0.53
47D:							
Wyrick	40	Fair		Poor		Poor	
		Too acid	0.12	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too acid	0.59
				Shrink-swell	0.87		
		Water erosion	0.90				
Marbie	35	Fair		Poor		Poor	
		Depth to cemented pan	0.01	Depth to cemented pan	0.00	Slope	0.00
						Hard to reclaim (dense layer)	0.01
		Too acid	0.12	Slope	0.50		
		Droughty	0.47	Wetness depth	0.53	Depth to cemented pan	0.01
W:							
Water	100	Not rated		Not rated		Not rated	

Table 14.—Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B:							
Austinville	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.12	Depth to water	1.00
1C:							
Austinville	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.12	Depth to water	1.00
		Slope	0.01				
1D:							
Austinville	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.12	Depth to water	1.00
		Slope	0.12				
1E:							
Austinville	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.12	Depth to water	1.00
		Slope	0.50				
2E:							
Austinville	45	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.12	Depth to water	1.00
		Slope	0.41				
Rock outcrop	30	Not rated		Not rated		Not rated	
3D:							
Berks	40	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.91	Depth to water	1.00
		Depth to bedrock	0.91	Seepage	0.38		
		Slope	0.28				
Weikert	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Seepage	0.70	Seepage	0.50		
		Slope	0.28				
4B:							
Botetourt	75	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	Cutbanks cave	1.00
						Slow refill	0.30
				Piping	0.99		
4C:							
Botetourt	75	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	Cutbanks cave	1.00
		Slope	0.01			Slow refill	0.30
				Piping	0.99		
5E:							
Brushy	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Thin layer	0.74	Depth to water	1.00
		Depth to bedrock	0.74				
		Seepage	0.70				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
6E:							
Calvin	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.91	Depth to water	1.00
		Slope	0.97	Seepage	0.20		
		Depth to bedrock	0.91				
7C:							
Carbo	75	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.98	Hard to pack	1.00	Depth to water	1.00
		Slope	0.01	Thin layer	0.98		
7D:							
Carbo	75	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.98	Hard to pack	1.00	Depth to water	1.00
		Slope	0.12	Thin layer	0.98		
8D:							
Carbo	45	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.98	Hard to pack	1.00	Depth to water	1.00
		Slope	0.04	Thin layer	0.98		
Rock outcrop	30	Not rated		Not rated		Not rated	
8E:							
Carbo	45	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.98	Hard to pack	1.00	Depth to water	1.00
		Slope	0.97	Thin layer	0.98		
Rock outcrop	30	Not rated		Not rated		Not rated	
9E:							
Carbo	45	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.98	Hard to pack	1.00	Depth to water	1.00
		Slope	0.76	Thin layer	0.98		
Rock outcrop	30	Not rated		Not rated		Not rated	
10C:							
Chiswell	30	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.58	Thin layer	1.00	Depth to water	1.00
		Seepage	0.01				
		Slope	0.01				
Litz	25	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.98	Depth to water	1.00
		Depth to bedrock	0.66	Seepage	0.32		
		Slope	0.01				
Groseclose	20	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Hard to pack	0.19	Depth to water	1.00
10D:							
Chiswell	30	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.58	Thin layer	1.00	Depth to water	1.00
		Slope	0.12				
		Seepage	0.01				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
10D:							
Litz----------------	25	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.98	Depth to water	1.00
		Depth to bedrock	0.66	Seepage	0.32		
		Slope	0.12				
Groseclose----------	20	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.12	Hard to pack	0.19	Depth to water	1.00
10E:							
Chiswell------------	30	Somewhat limited		Very limited		Very limited	
		Slope	0.97	Thin layer	1.00	Depth to water	1.00
		Depth to bedrock	0.58				
		Seepage	0.01				
Litz----------------	25	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Thin layer	0.98	Depth to water	1.00
		Seepage	0.70	Seepage	0.32		
		Depth to bedrock	0.66				
Groseclose----------	20	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Hard to pack	0.19	Depth to water	1.00
11D:							
Dekalb--------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.83	Depth to water	1.00
		Depth to bedrock	0.83	Seepage	0.25		
		Slope	0.12	Large stones content	0.01		
11E:							
Dekalb--------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.83	Depth to water	1.00
		Slope	1.00	Seepage	0.25		
		Depth to bedrock	0.83	Large stones content	0.01		
12B:							
Derroc--------------	80	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Large stones content	0.43	Depth to water	1.00
				Seepage	0.10		
13D:							
Drypond-------------	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.28	Seepage	0.30		
Rock outcrop--------	30	Not rated		Not rated		Not rated	
13E:							
Drypond-------------	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	1.00	Seepage	0.30		
Rock outcrop--------	30	Not rated		Not rated		Not rated	
14:							
Dumps, mines--------	100	Not rated		Not rated		Not rated	

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
15B:							
Frederick-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.13	Depth to water	1.00
15C:							
Frederick-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.13	Depth to water	1.00
		Slope	0.01				
15D:							
Frederick-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.13	Depth to water	1.00
		Slope	0.12				
15E:							
Frederick-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.13	Depth to water	1.00
		Slope	0.50				
15F:							
Frederick-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.99	Hard to pack	0.13	Depth to water	1.00
		Seepage	0.70				
16B:							
Frederick-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.13	Depth to water	1.00
16C:							
Frederick-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.13	Depth to water	1.00
		Slope	0.01				
16D:							
Frederick-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.13	Depth to water	1.00
		Slope	0.12				
16E:							
Frederick-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.13	Depth to water	1.00
		Slope	0.50				
17C:							
Frederick-----------	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.13	Depth to water	1.00
Urban land----------	30	Not rated		Not rated		Not rated	
18E:							
Greenlee------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Large stones content	0.46	Depth to water	1.00
		Slope	0.97				
19B:							
Ingledove-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.91	Depth to water	1.00

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
20B:							
Ingledove-----------	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.91	Depth to water	1.00
Urban land----------	30	Not rated		Not rated		Not rated	
21D:							
Konnarock-----------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.93	Depth to water	1.00
		Depth to bedrock	0.93	Seepage	0.50		
		Slope	0.28	Large stones content	0.01		
21E:							
Konnarock-----------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.93	Depth to water	1.00
		Slope	1.00	Seepage	0.50		
		Depth to bedrock	0.93	Large stones content	0.01		
22B:							
Laidig--------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Depth to saturated zone	0.86	Depth to water	1.00
		Depth to cemented pan	0.83	Thin layer	0.83		
				Seepage	0.04		
22C:							
Laidig--------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Depth to saturated zone	0.86	Depth to water	1.00
		Depth to cemented pan	0.83	Thin layer	0.83		
		Slope	0.01	Seepage	0.04		
22D:							
Laidig--------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Depth to saturated zone	0.86	Depth to water	1.00
		Depth to cemented pan	0.83	Thin layer	0.83		
		Slope	0.12	Seepage	0.04		
23C:							
Laidig--------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Depth to saturated zone	0.86	Depth to water	1.00
		Depth to cemented pan	0.83	Thin layer	0.83		
		Slope	0.01	Seepage	0.04		
23D:							
Laidig--------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Depth to saturated zone	0.86	Depth to water	1.00
		Depth to cemented pan	0.83	Thin layer	0.83		
		Slope	0.12	Seepage	0.04		
24C:							
Lily----------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.86	Depth to water	1.00
		Depth to bedrock	0.86	Seepage	0.03		
		Slope	0.01				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
24D:							
Lily	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.86	Depth to water	1.00
		Depth to bedrock	0.86	Seepage	0.03		
		Slope	0.12				
24E:							
Lily	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.86	Depth to water	1.00
		Slope	0.97	Seepage	0.03		
		Depth to bedrock	0.86				
25A:							
Maurertown	75	Not limited		Very limited		Somewhat limited	
				Ponding	1.00	Slow refill	0.30
				Depth to saturated zone	1.00	Cutbanks cave	0.10
26A:							
Melvin	75	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Ponding	1.00	Slow refill	0.30
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	0.35		
27D:							
Newbern	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.12				
Westmoreland	35	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.98	Depth to water	1.00
		Depth to bedrock	0.19	Seepage	0.38		
		Slope	0.12	Thin layer	0.19		
27E:							
Newbern	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.97				
Westmoreland	35	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Piping	0.98	Depth to water	1.00
		Seepage	0.70	Seepage	0.38		
		Depth to bedrock	0.19	Thin layer	0.19		
28:							
Pits, quarries	100	Not rated		Not rated		Not rated	
29C:							
Poynor	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	Depth to water	1.00
		Slope	0.01				
29D:							
Poynor	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	Depth to water	1.00
		Slope	0.12				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
29E:							
Poynor--------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	Depth to water	1.00
		Slope	0.94				
30F:							
Rock outcrop--------	40	Not rated		Not rated		Not rated	
Newbern-------------	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	1.00				
31B:							
Shelocta------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.96	Depth to water	1.00
31C:							
Shelocta------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.96	Depth to water	1.00
		Slope	0.01				
31D:							
Shelocta------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.96	Depth to water	1.00
		Slope	0.12				
31E:							
Shelocta------------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.96	Depth to water	1.00
		Slope	0.72				
32B:							
Shottower-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.45	Depth to water	1.00
32C:							
Shottower-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.45	Depth to water	1.00
		Slope	0.01				
32D:							
Shottower-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.45	Depth to water	1.00
		Slope	0.21				
33A:							
Sindion-------------	75	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	0.99		
34:							
Slickens------------	100	Not rated		Not rated		Not rated	
35A:							
Speedwell-----------	80	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
				Seepage	0.03		

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
36D:							
Sylco	40	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.66	Depth to water	1.00
		Depth to bedrock	0.66	Seepage	0.12		
		Slope	0.28				
Sylvatus	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.28	Seepage	0.38		
36E:							
Sylco	40	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.66	Depth to water	1.00
		Seepage	0.70	Seepage	0.12		
		Depth to bedrock	0.66				
Sylvatus	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	1.00	Seepage	0.38		
37B:							
Tate	75	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
				Seepage	0.10		
38B:							
Timberville	75	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.77	Depth to water	1.00
39B:							
Tumbling	75	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.93	Depth to water	1.00
39C:							
Tumbling	75	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.93	Depth to water	1.00
		Slope	0.01				
39D:							
Tumbling	75	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.93	Depth to water	1.00
		Slope	0.12				
39E:							
Tumbling	75	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.93	Depth to water	1.00
		Slope	0.50				
40C:							
Tumbling	75	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.93	Depth to water	1.00
		Slope	0.01				
40D:							
Tumbling	75	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.93	Depth to water	1.00
		Slope	0.12				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40E:							
Tumbling	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Piping	0.93	Depth to water	1.00
		Seepage	0.70				
41:							
Udorthents	45	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
42E:							
Weikert	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	1.00	Seepage	0.50		
		Seepage	0.70				
Berks	35	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Thin layer	0.91	Depth to water	1.00
		Slope	1.00	Seepage	0.38		
		Depth to bedrock	0.91				
43B:							
Wheeling	75	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.97	Depth to water	1.00
				Seepage	0.03		
44B:							
Wheeling	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.97	Depth to water	1.00
				Seepage	0.03		
Urban land	30	Not rated		Not rated		Not rated	
45A:							
Wolfgap	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.18	Depth to water	1.00
46C:							
Wurno	45	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.77	Thin layer	0.88	Depth to water	1.00
		Seepage	0.70	Seepage	0.25		
		Slope	0.01				
Newbern	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.01				
46D:							
Wurno	45	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.77	Thin layer	0.88	Depth to water	1.00
		Seepage	0.70	Seepage	0.25		
		Slope	0.12				
Newbern	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.12				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
46E:							
Wurno	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.97	Thin layer	0.88	Depth to water	1.00
		Depth to bedrock	0.77	Seepage	0.25		
		Seepage	0.70				
Newbern	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.97				
47B:							
Wyrick	40	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.70	Depth to water	1.00
Marbie	35	Somewhat limited		Very limited		Very limited	
		Depth to cemented pan	0.99	Piping	1.00	Depth to water	1.00
		Seepage	0.70	Depth to saturated zone	0.99		
				Thin layer	0.99		
47C:							
Wyrick	40	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.70	Depth to water	1.00
		Slope	0.01				
Marbie	35	Somewhat limited		Very limited		Very limited	
		Depth to cemented pan	0.99	Piping	1.00	Depth to water	1.00
		Seepage	0.70	Depth to saturated zone	0.99		
		Slope	0.01	Thin layer	0.99		
47D:							
Wyrick	40	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.70	Depth to water	1.00
		Slope	0.12				
Marbie	35	Somewhat limited		Very limited		Very limited	
		Depth to cemented pan	0.99	Piping	1.00	Depth to water	1.00
		Seepage	0.70	Depth to saturated zone	0.99		
		Slope	0.12	Thin layer	0.99		
W:							
Water	100	Not rated		Not rated		Not rated	

Table 15.—Engineering Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
1B:												
Austinville-----	0-6	Silty clay loam	CL	A-6	0	0-3	90-100	85-100	80-100	70-95	31-43	11-18
	6-62	Silty clay, silty clay loam, clay	MH, CH, CL	A-7	0	0-3	90-100	85-100	75-100	65-95	39-84	16-41
1C:												
Austinville-----	0-6	Silty clay loam	CL	A-6	0	0-3	90-100	85-100	80-100	70-95	31-43	11-18
	6-62	Silty clay, silty clay loam, clay	MH, CH, CL	A-7	0	0-3	90-100	85-100	75-100	65-95	39-84	16-41
1D:												
Austinville-----	0-6	Silty clay loam	CL	A-6	0	0-3	90-100	85-100	80-100	70-95	31-43	11-18
	6-62	Silty clay, silty clay loam, clay	MH, CH, CL	A-7	0	0-3	90-100	85-100	75-100	65-95	39-84	16-41
1E:												
Austinville-----	0-6	Silty clay loam	CL	A-6	0	0-3	90-100	85-100	80-100	70-95	31-43	11-18
	6-62	Silty clay, silty clay loam, clay	MH, CH, CL	A-7	0	0-3	90-100	85-100	75-100	65-95	39-84	16-41
2E:												
Austinville-----	0-6	Silty clay loam	CL	A-6	0	0-3	90-100	85-100	80-100	70-95	31-43	11-18
	6-62	Silty clay, silty clay loam, clay	MH, CH, CL	A-7	0	0-3	90-100	85-100	75-100	65-95	39-84	16-41
Rock outcrop----	0-60	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
3D:												
Berks-----------	0-5	Very channery silt loam	GC-GM, GM, GC	A-2, A-4	0	0-20	55-65	40-55	40-55	30-50	12-31	1-11
	5-15	Channery silt loam, extremely channery loam, channery silty clay loam, very channery silt loam	GC-GM, GC, GM, SM, SC-SM, SC, ML, CL, CL-ML	A-4, A-1, A-2, A-6	0	0-30	40-85	20-75	20-75	15-75	12-36	1-14
	15-26	Very channery silt loam, extremely channery loam, very channery silty clay loam, extremely channery silt loam	GC-GM, GC, GM, SM, SC-SM, SC	A-2, A-1, A-6	0	0-30	40-65	20-55	20-55	15-50	12-36	1-14
	26-28	Extremely channery silt loam, very channery silt loam, extremely channery loam	GP-GC, GW-GC, GM, GC, GC-GM, SM, SC-SM, SC	A-1, A-2, A-4	0	0-40	30-65	10-55	10-55	5-50	12-25	1-8
	28-38	Bedrock			---	---	---	---	---	---	---	---
Weikert---------	0-2	Very channery silt loam	GC-GM	A-2, A-4	0	0-10	50-60	35-50	35-50	25-45	12-31	1-11
	2-12	Extremely channery silt loam, very channery silt loam, extremely channery loam	GP-GC, GP-GM, GC, GC-GM, GM, SM, SC, SC-SM	A-1, A-2, A-4	0	0-15	30-60	10-50	10-50	5-45	12-31	1-11
	12-22	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
4B:												
Botetourt-------	0-7	Loam	CL-ML, CL, ML	A-4	0	0-10	85-100	85-100	70-95	50-75	13-31	1-11
	7-18	Loam, clay loam, gravelly sandy clay loam, gravelly silt loam	CL, ML, CL-ML, SM, SC-SM, SC	A-4, A-6, A-2	0	0-10	70-100	60-100	45-100	20-90	13-34	1-13
	18-37	Clay loam, loam, gravelly sandy clay loam, gravelly loam	CL, SC	A-6, A-2	0	0-10	70-100	60-100	45-100	20-80	23-39	7-16
	37-48	Gravelly loam, gravelly sandy clay loam, loam, clay loam	SC, CL	A-6, A-2	0	0-10	70-100	60-100	45-100	20-80	23-39	7-16
	48-62	Gravelly loam, clay loam, sandy clay loam, gravelly fine sandy loam, very gravelly sandy loam	SC, SC-SM, CL, CL-ML	A-6, A-4, A-2, A-1	0	0-10	60-95	45-90	25-90	15-75	18-39	4-16

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
4C:												
Botetourt-------	0-7	Loam	CL-ML, CL, ML	A-4	0	0-10	85-100	85-100	70-95	50-75	13-31	1-11
	7-18	Loam, clay loam, gravelly sandy clay loam, gravelly silt loam	CL, ML, CL-ML, SM, SC-SM, SC	A-4, A-6, A-2	0	0-10	70-100	60-100	45-100	20-90	13-34	1-13
	18-37	Clay loam, loam, gravelly sandy clay loam, gravelly loam	CL, SC	A-6, A-2	0	0-10	70-100	60-100	45-100	20-80	23-39	7-16
	37-48	Gravelly loam, gravelly sandy clay loam, loam, clay loam	SC, CL	A-6, A-2	0	0-10	70-100	60-100	45-100	20-80	23-39	7-16
	48-62	Gravelly loam, clay loam, sandy clay loam, gravelly fine sandy loam, very gravelly sandy loam	SC, SC-SM, CL, CL-ML	A-6, A-4, A-2, A-1	0	0-10	60-95	45-90	25-90	15-75	18-39	4-16
5E:												
Brushy----------	0-7	Extremely gravelly loam	GP-GC, GC, GC-GM	A-1, A-2	0	0-10	30-40	10-25	10-25	5-17	16-25	3-8
	7-13	Very gravelly loam, gravelly silt loam, extremely gravelly fine sandy loam	GC-GM, GP-GC, GC, SC-SM, SC	A-1, A-2, A-4	0-10	0-15	35-70	15-60	10-60	5-50	16-25	3-8
	13-34	Very gravelly clay loam, very gravelly sandy clay loam, extremely gravelly loam	GC, GC-GM, GP-GC, SC-SM, SC	A-2, A-1, A-6	0-10	0-15	35-65	15-50	15-50	5-40	18-39	4-19
	34-44	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
6E:												
Calvin----------	0-5	Channery silt loam	CL-ML, CL	A-4	0	0-10	75-85	70-80	60-80	45-70	16-31	3-11
	5-22	Very channery silt loam, very channery loam, channery silt loam	SC, SC-SM, CL, CL-ML	A-4, A-2	0	0-15	55-75	40-70	35-70	25-60	16-31	3-11
	22-28	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC, GC-GM, GP-GC, SC-SM, SC	A-2, A-1, A-4	0	0-20	35-65	15-55	15-55	10-50	16-31	3-11
	28-38	Bedrock			---	---	---	---	---	---	---	---
7C:												
Carbo-----------	0-5	Silty clay loam	CL	A-6, A-7	0	0-2	90-100	85-100	80-100	70-95	36-48	16-25
	5-24	Clay	CH	A-7	0	0-5	85-100	80-100	70-100	60-95	66-84	39-53
	24-34	Bedrock			---	---	---	---	---	---	---	---
7D:												
Carbo-----------	0-5	Silty clay loam	CL	A-6, A-7	0	0-2	90-100	85-100	80-100	70-95	36-48	16-25
	5-24	Clay	CH	A-7	0	0-5	85-100	80-100	70-100	60-95	66-84	39-53
	24-34	Bedrock			---	---	---	---	---	---	---	---
8D:												
Carbo-----------	0-5	Silty clay loam	CL	A-6, A-7	0	0-2	90-100	85-100	80-100	70-95	36-48	16-25
	5-24	Clay	CH	A-7	0	0-5	85-100	80-100	70-100	60-95	66-84	39-53
	24-34	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
8E:												
Carbo-----------	0-5	Silty clay loam	CL	A-6, A-7	0	0-2	90-100	85-100	80-100	70-95	36-48	16-25
	5-24	Clay	CH	A-7	0	0-5	85-100	80-100	70-100	60-95	66-84	39-53
	24-34	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
9E:												
Carbo-----------	0-5	Silty clay loam	CL	A-6, A-7	0	0-2	90-100	85-100	80-100	70-95	36-48	16-25
	5-24	Clay	CH	A-7	0	0-5	85-100	80-100	70-100	60-95	66-84	39-53
	24-34	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
10C:												
Chiswell--------	0-4	Channery silt loam	CL-ML, CL	A-4	0	3-15	65-85	55-80	50-80	40-70	16-31	3-11
	4-8	Channery silt loam, channery loam	CL-ML, CL, SC, SC-SM	A-4	0	0-15	65-85	55-80	50-80	35-70	16-31	3-11
	8-17	Very channery silt loam, extremely channery silt loam, very channery clay loam, very channery silty clay loam	GC, GC-GM, GP-GC, SC-SM, SC	A-2, A-6, A-1	0	0-20	35-65	15-55	15-55	10-50	16-39	3-16
	17-27	Bedrock			---	---	---	---	---	---	---	---
Litz------------	0-5	Silt loam	CL, CL-ML	A-4	0	0-5	85-100	80-100	70-100	55-90	21-41	6-19
	5-12	Channery silt loam, channery silty clay loam, very channery silt loam, extremely channery silt loam	SC, SC-SM, GW-GC, GC, GC-GM, CL, CL-ML	A-4, A-1, A-2, A-6	0-1	0-20	35-70	10-60	5-60	5-60	20-44	6-25
	12-24	Extremely channery silt loam, very channery silty clay loam, very channery silt loam, very flaggy loam	GC, GC-GM, GW-GC, SC, SC-SM	A-2, A-1, A-4, A-6	0-1	0-20	30-60	10-50	10-50	5-50	20-44	6-25
	24-46	Bedrock			---	---	---	---	---	---	---	---
Groseclose------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	80-100	75-100	70-100	55-90	13-36	1-16
	9-54	Clay, silty clay, silty clay loam, clay loam	CH, MH, CL	A-7	0	0	80-100	75-100	70-100	55-95	39-66	16-39
	54-62	Silty clay loam, clay, clay loam, sandy clay loam	CL, CH	A-7, A-6	0	0	80-100	75-100	70-100	55-95	34-57	13-32

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
10D:												
Chiswell--------	0-4	Channery silt loam	CL-ML, CL	A-4	0	3-15	65-85	55-80	50-80	40-70	16-31	3-11
	4-8	Channery silt loam, channery loam	CL-ML, CL, SC, SC-SM	A-4	0	0-15	65-85	55-80	50-80	35-70	16-31	3-11
	8-17	Very channery silt loam, extremely channery silt loam, very channery clay loam, very channery silty clay loam	GC, GC-GM, GP-GC, SC-SM, SC	A-2, A-6, A-1	0	0-20	35-65	15-55	15-55	10-50	16-39	3-16
	17-27	Bedrock			---	---	---	---	---	---	---	---
Litz------------	0-5	Silt loam	CL, CL-ML	A-4	0	0-5	85-100	80-100	70-100	55-90	21-41	6-19
	5-12	Channery silt loam, channery silty clay loam, very channery silt loam, extremely channery silt loam	SC, SC-SM, GW-GC, GC, GC-GM, CL, CL-ML	A-4, A-1, A-2, A-6	0-1	0-20	35-70	10-60	5-60	5-60	20-44	6-25
	12-24	Extremely channery silt loam, very channery silty clay loam, very channery silt loam, very flaggy loam	GC, GC-GM, GW-GC, SC, SC-SM	A-2, A-1, A-4, A-6	0-1	0-20	30-60	10-50	10-50	5-50	20-44	6-25
	24-46	Bedrock			---	---	---	---	---	---	---	---
Groseclose------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	80-100	75-100	70-100	55-90	13-36	1-16
	9-54	Clay, silty clay, silty clay loam, clay loam	CH, MH, CL	A-7	0	0	80-100	75-100	70-100	55-95	39-66	16-39
	54-62	Silty clay loam, clay, clay loam, sandy clay loam	CL, CH	A-7, A-6	0	0	80-100	75-100	70-100	55-95	34-57	13-32

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
10E:												
Chiswell--------	0-4	Channery silt loam	CL-ML, CL	A-4	0	3-15	65-85	55-80	50-80	40-70	16-31	3-11
	4-8	Channery silt loam, channery loam	CL-ML, CL, SC, SC-SM	A-4	0	0-15	65-85	55-80	50-80	35-70	16-31	3-11
	8-17	Very channery silt loam, extremely channery silt loam, very channery clay loam, very channery silty clay loam	GC, GC-GM, GP-GC, SC-SM, SC	A-2, A-6, A-1	0	0-20	35-65	15-55	15-55	10-50	16-39	3-16
	17-27	Bedrock			---	---	---	---	---	---	---	---
Litz------------	0-5	Silt loam	CL, CL-ML	A-4	0	0-5	85-100	80-100	70-100	55-90	21-41	6-19
	5-12	Channery silt loam, channery silty clay loam, very channery silt loam, extremely channery silt loam	SC, SC-SM, GW-GC, GC, GC-GM, CL, CL-ML	A-4, A-1, A-2, A-6	0-1	0-20	35-70	10-60	5-60	5-60	20-44	6-25
	12-24	Extremely channery silt loam, very channery silty clay loam, very channery silt loam, very flaggy loam	GC, GC-GM, GW-GC, SC, SC-SM	A-2, A-1, A-4, A-6	0-1	0-20	30-60	10-50	10-50	5-50	20-44	6-25
	24-46	Bedrock			---	---	---	---	---	---	---	---
Groseclose------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	80-100	75-100	70-100	55-90	13-36	1-16
	9-54	Clay, silty clay, silty clay loam, clay loam	CH, MH, CL	A-7	0	0	80-100	75-100	70-100	55-95	39-66	16-39
	54-62	Silty clay loam, clay, clay loam, sandy clay loam	CL, CH	A-7, A-6	0	0	80-100	75-100	70-100	55-95	34-57	13-32

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
11D:												
Dekalb----------	0-5	Channery sandy loam	SC-SM, SC	A-1, A-2	0-1	5-30	75-85	65-80	40-55	20-30	16-25	3-8
	5-24	Very channery sandy loam, very channery loam, channery sandy loam	SC-SM, SM, ML, CL-ML	A-1, A-2, A-4	0-2	5-40	55-85	40-80	25-75	10-60	13-23	1-7
	24-31	Extremely channery sandy loam, very channery sandy loam, very flaggy loamy sand	GW-GM, GW, GC-GM, GM	A-1	0-5	10-50	30-55	10-40	5-30	2-15	12-21	1-6
	31-41	Bedrock			---	---	---	---	---	---	---	---
11E:												
Dekalb----------	0-5	Channery sandy loam	SC-SM, SC	A-1, A-2	0-1	5-30	75-85	65-80	40-55	20-30	16-25	3-8
	5-24	Very channery sandy loam, very channery loam, channery sandy loam	SC-SM, SM, ML, CL-ML	A-1, A-2, A-4	0-2	5-40	55-85	40-80	25-75	10-60	13-23	1-7
	24-31	Extremely channery sandy loam, very channery sandy loam, very flaggy loamy sand	GW-GM, GW, GC-GM, GM	A-1	0-5	10-50	30-55	10-40	5-30	2-15	12-21	1-6
	31-41	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
12B:												
Derroc----------	0-8	Cobbly sandy loam	SM, SC-SM	A-1, A-2	0	15-30	80-95	75-90	45-60	20-35	12-21	1-6
	8-35	Very cobbly sandy loam, extremely cobbly sandy loam, gravelly loam	SM, SC-SM, GC-GM, GM, GP-GM	A-1, A-2, A-4	0	25-50	45-80	25-75	15-70	10-55	12-21	1-6
	35-62	Extremely cobbly loamy sand, very cobbly sandy loam, extremely cobbly sandy loam	SP-SM, SM	A-1, A-2	0	35-60	50-95	35-90	15-70	5-35	12-16	1-3
13D:												
Drypond---------	0-5	Very gravelly sandy loam	GC-GM, GC, GW-GC, SC, SC-SM	A-1, A-2	0	0-10	45-60	25-50	15-35	10-20	16-25	3-8
	5-13	Very gravelly sandy loam, extremely channery sandy clay loam, gravelly loam	GC-GM, GC, GW-GC, SC, SC-SM	A-1, A-2, A-4	0	0-15	35-70	15-60	10-55	5-45	18-30	4-11
	13-18	Extremely gravelly sandy loam, very gravelly loam, extremely channery sandy loam	GW-GC, GW, GC-GM, GC	A-1, A-2	0	0-15	30-50	5-35	5-35	2-25	16-30	3-11
	18-28	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
13E:												
Drypond---------	0-5	Very gravelly sandy loam	GC-GM, GC, GW-GC, SC, SC-SM	A-1, A-2	0	0-10	45-60	25-50	15-35	10-20	16-25	3-8
	5-13	Very gravelly sandy loam, extremely channery sandy clay loam, gravelly loam	GC-GM, GC, GW-GC, SC, SC-SM	A-1, A-2, A-4	0	0-15	35-70	15-60	10-55	5-45	18-30	4-11
	13-18	Extremely gravelly sandy loam, very gravelly loam, extremely channery sandy loam	GW-GC, GW, GC-GM, GC	A-1, A-2	0	0-15	30-50	5-35	5-35	2-25	16-30	3-11
	18-28	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
14.												
Dumps, mines												
15B:												
Frederick-------	0-8	Silt loam	CL, CL-ML	A-4	0	0-5	85-100	80-100	75-100	55-90	19-31	5-11
	8-18	Silty clay, clay, silty clay loam	MH, CL, CH	A-7	0	0-5	85-100	80-100	75-100	60-95	39-75	16-36
	18-51	Clay, silty clay	MH, CL, CH	A-7	0	0-5	85-100	80-100	75-100	60-95	43-79	18-38
	51-72	Clay, silty clay	MH, CL, CH	A-7	0	0-5	85-100	80-100	70-100	60-95	43-79	18-38
15C:												
Frederick-------	0-8	Silt loam	CL, CL-ML	A-4	0	0-5	85-100	80-100	75-100	55-90	19-31	5-11
	8-18	Silty clay, clay, silty clay loam	MH, CL, CH	A-7	0	0-5	85-100	80-100	75-100	60-95	39-75	16-36
	18-51	Clay, silty clay	MH, CL, CH	A-7	0	0-5	85-100	80-100	75-100	60-95	43-79	18-38
	51-72	Clay, silty clay	MH, CL, CH	A-7	0	0-5	85-100	80-100	70-100	60-95	43-79	18-38

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
15D:												
Frederick-------	0-8	Silt loam	CL, CL-ML	A-4	0	0-5	85-100	80-100	75-100	55-90	19-31	5-11
	8-18	Silty clay, clay, silty clay loam	MH, CL, CH	A-7	0	0-5	85-100	80-100	75-100	60-95	39-75	16-36
	18-51	Clay, silty clay	MH, CL, CH	A-7	0	0-5	85-100	80-100	75-100	60-95	43-79	18-38
	51-72	Clay, silty clay	MH, CL, CH	A-7	0	0-5	85-100	80-100	70-100	60-95	43-79	18-38
15E:												
Frederick-------	0-8	Silt loam	CL, CL-ML	A-4	0	0-5	85-100	80-100	75-100	55-90	19-31	5-11
	8-18	Silty clay, clay, silty clay loam	MH, CL, CH	A-7	0	0-5	85-100	80-100	75-100	60-95	39-75	16-36
	18-51	Clay, silty clay	MH, CL, CH	A-7	0	0-5	85-100	80-100	75-100	60-95	43-79	18-38
	51-72	Clay, silty clay	MH, CL, CH	A-7	0	0-5	85-100	80-100	70-100	60-95	43-79	18-38
15F:												
Frederick-------	0-8	Silt loam	CL, CL-ML	A-4	0	0-5	85-100	80-100	75-100	55-90	19-31	5-11
	8-18	Silty clay, clay, silty clay loam	MH, CL, CH	A-7	0	0-5	85-100	80-100	75-100	60-95	39-75	16-36
	18-51	Clay, silty clay	MH, CL, CH	A-7	0	0-5	85-100	80-100	75-100	60-95	43-79	18-38
	51-72	Clay, silty clay	MH, CL, CH	A-7	0	0-5	85-100	80-100	70-100	60-95	43-79	18-38
16B:												
Frederick-------	0-8	Gravelly silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-10	65-80	55-75	50-75	40-65	19-31	5-11
	8-18	Silty clay, clay, gravelly silty clay loam	MH, CH, SM, SC	A-7	0	0-5	65-100	55-100	50-100	40-95	39-75	16-36
	18-51	Clay, silty clay, gravelly clay	MH, CH, SM, SC	A-7	0	0-5	65-100	55-100	50-100	40-95	43-79	18-38
	51-72	Clay, silty clay, gravelly clay	MH, CH, SM, SC	A-7	0	0-5	65-100	55-100	45-100	40-95	43-79	18-38

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
16C:												
Frederick-------	0-8	Gravelly silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-10	65-80	55-75	50-75	40-65	19-31	5-11
	8-18	Silty clay, clay, gravelly silty clay loam	MH, CH, SM, SC	A-7	0	0-5	65-100	55-100	50-100	40-95	39-75	16-36
	18-51	Clay, silty clay, gravelly clay	MH, CH, SM, SC	A-7	0	0-5	65-100	55-100	50-100	40-95	43-79	18-38
	51-72	Clay, silty clay, gravelly clay	MH, CH, SM, SC	A-7	0	0-5	65-100	55-100	45-100	40-95	43-79	18-38
16D:												
Frederick-------	0-8	Gravelly silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-10	65-80	55-75	50-75	40-65	19-31	5-11
	8-18	Silty clay, clay, gravelly silty clay loam	MH, CH, SM, SC	A-7	0	0-5	65-100	55-100	50-100	40-95	39-75	16-36
	18-51	Clay, silty clay, gravelly clay	MH, CH, SM, SC	A-7	0	0-5	65-100	55-100	50-100	40-95	43-79	18-38
	51-72	Clay, silty clay, gravelly clay	MH, CH, SM, SC	A-7	0	0-5	65-100	55-100	45-100	40-95	43-79	18-38
16E:												
Frederick-------	0-8	Gravelly silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-10	65-80	55-75	50-75	40-65	19-31	5-11
	8-18	Silty clay, clay, gravelly silty clay loam	MH, CH, SM, SC	A-7	0	0-5	65-100	55-100	50-100	40-95	39-75	16-36
	18-51	Clay, silty clay, gravelly clay	MH, CH, SM, SC	A-7	0	0-5	65-100	55-100	50-100	40-95	43-79	18-38
	51-72	Clay, silty clay, gravelly clay	MH, CH, SM, SC	A-7	0	0-5	65-100	55-100	45-100	40-95	43-79	18-38

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
17C:												
Frederick-------	0-8	Silt loam	CL, CL-ML	A-4	0	0-5	85-100	80-100	75-100	55-90	19-31	5-11
	8-18	Silty clay, clay, silty clay loam	MH, CL, CH	A-7	0	0-5	85-100	80-100	75-100	60-95	39-75	16-36
	18-51	Clay, silty clay	MH, CL, CH	A-7	0	0-5	85-100	80-100	75-100	60-95	43-79	18-38
	51-72	Clay, silty clay	MH, CL, CH	A-7	0	0-5	85-100	80-100	70-100	60-95	43-79	18-38
Urban land.												
18E:												
Greenlee--------	0-9	Very cobbly loam	SC-SM, SC, SM	A-4, A-2	0	30-45	55-75	40-70	35-65	25-50	12-31	1-11
	9-50	Very cobbly loam, very cobbly sandy loam, very stony sandy loam	SC-SM, SC, SM, CL-ML, CL, ML	A-4, A-2, A-1	0-10	35-50	65-85	55-80	35-75	15-60	12-31	1-11
	50-65	Very cobbly loam, very cobbly sandy loam, very stony sandy loam, very bouldery loamy sand	SC-SM, SC, SM, CL-ML, CL, ML, SP-SC, SP-SM	A-4, A-2, A-1	0-30	45-60	60-90	45-90	20-85	10-65	12-25	1-8
19B:												
Ingledove-------	0-9	Loam	CL, CL-ML	A-4	0	0	80-100	75-100	65-95	45-75	21-31	6-11
	9-42	Clay loam, loam, sandy clay loam	CL, SC	A-6, A-2	0	0	80-100	75-100	60-100	25-80	23-39	7-16
	42-57	Clay loam, gravelly loam, very gravelly sandy clay loam	CL, SC, GP-GC, GC	A-6, A-2	0	0-5	45-100	30-100	20-100	10-80	23-39	7-16
	57-62	Sandy clay loam, clay loam, gravelly loam, very gravelly loamy sand, very gravelly sandy loam	SC, SC-SM, GP-GC, GC, GC-GM, CL, CL-ML	A-2, A-1, A-4, A-6	0	0-5	45-100	25-100	15-100	5-80	19-39	3-16

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
20B:												
Ingledove-------	0-9	Loam	CL, CL-ML	A-4	0	0	80-100	75-100	65-95	45-75	21-31	6-11
	9-42	Clay loam, loam, sandy clay loam	CL, SC	A-6, A-2	0	0	80-100	75-100	60-100	25-80	23-39	7-16
	42-57	Clay loam, gravelly loam, very gravelly sandy clay loam	CL, SC, GP-GC, GC	A-6, A-2	0	0-5	45-100	30-100	20-100	10-80	23-39	7-16
	57-62	Sandy clay loam, clay loam, gravelly loam, very gravelly loamy sand, very gravelly sandy loam	SC, SC-SM, GP-GC, GC, GC-GM, CL, CL-ML	A-2, A-1, A-4, A-6	0	0-5	45-100	25-100	15-100	5-80	19-39	3-16
Urban land.												
21D:												
Konnarock-------	0-2	Very channery silt loam	SC, SC-SM	A-4, A-2	0	15-30	50-70	35-60	30-60	25-55	16-30	2-10
	2-23	Very channery silt loam, very channery loam, channery silt loam	SC, CL, GC	A-4, A-2	0	10-35	40-85	25-80	20-80	15-75	20-30	4-10
	23-27	Extremely channery silt loam, very channery silt loam, very channery loam	GP-GC, GC, SC	A-2, A-4	0	15-40	30-70	10-60	10-60	5-55	20-30	4-10
	27-37	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
21E:												
Konnarock-------	0-2	Very channery silt loam	SC, SC-SM	A-4, A-2	0	15-30	50-70	35-60	30-60	25-55	16-30	2-10
	2-23	Very channery silt loam, very channery loam, channery silt loam	SC, CL, GC	A-4, A-2	0	10-35	40-85	25-80	20-80	15-75	20-30	4-10
	23-27	Extremely channery silt loam, very channery silt loam, very channery loam	GP-GC, GC, SC	A-2, A-4	0	15-40	30-70	10-60	10-60	5-55	20-30	4-10
	27-37	Bedrock			---	---	---	---	---	---	---	---
22B:												
Laidig----------	0-6	Sandy loam	SC-SM, SC, SM	A-2	0	2-5	85-95	80-95	45-65	25-40	13-25	1-8
	6-15	Sandy loam, fine sandy loam, loam, silt loam	SC-SM, SM, SC, ML, CL, CL-ML	A-2, A-4	0	2-5	85-95	80-95	45-95	25-85	13-30	1-11
	15-31	Sandy clay loam, channery loam, very channery clay loam	SC, CL	A-6, A-2	0-5	2-25	60-95	50-95	40-95	15-75	23-39	7-16
	31-63	Sandy loam, channery sandy clay loam, very channery clay loam	SC-SM, SM, SC, ML, CL, CL-ML	A-2, A-1, A-4, A-6	0-5	0-20	65-95	50-95	30-95	15-75	13-34	1-13

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
22C:												
Laidig----------	0-6	Sandy loam	SC-SM, SC, SM	A-2	0	2-5	85-95	80-95	45-65	25-40	13-25	1-8
	6-15	Sandy loam, fine sandy loam, loam, silt loam	SC-SM, SM, SC, ML, CL, CL-ML	A-2, A-4	0	2-5	85-95	80-95	45-95	25-85	13-30	1-11
	15-31	Sandy clay loam, channery loam, very channery clay loam	SC, CL	A-6, A-2	0-5	2-25	60-95	50-95	40-95	15-75	23-39	7-16
	31-63	Sandy loam, channery sandy clay loam, very channery clay loam	SC-SM, SM, SC, ML, CL, CL-ML	A-2, A-1, A-4, A-6	0-5	0-20	65-95	50-95	30-95	15-75	13-34	1-13
22D:												
Laidig----------	0-6	Sandy loam	SC-SM, SC, SM	A-2	0	2-5	85-95	80-95	45-65	25-40	13-25	1-8
	6-15	Sandy loam, fine sandy loam, loam, silt loam	SC-SM, SM, SC, ML, CL, CL-ML	A-2, A-4	0	2-5	85-95	80-95	45-95	25-85	13-30	1-11
	15-31	Sandy clay loam, channery loam, very channery clay loam	SC, CL	A-6, A-2	0-5	2-25	60-95	50-95	40-95	15-75	23-39	7-16
	31-63	Sandy loam, channery sandy clay loam, very channery clay loam	SC-SM, SM, SC, ML, CL, CL-ML	A-2, A-1, A-4, A-6	0-5	0-20	65-95	50-95	30-95	15-75	13-34	1-13

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
23C:												
Laidig----------	0-6	Sandy loam	SC-SM, SC, SM	A-2	0	2-5	85-95	80-95	45-65	25-40	13-25	1-8
	6-15	Sandy loam, fine sandy loam, loam, silt loam	SC-SM, SM, SC, ML, CL, CL-ML	A-2, A-4	0	2-5	85-95	80-95	45-95	25-85	13-30	1-11
	15-31	Sandy clay loam, channery loam, very channery clay loam	SC, CL	A-6, A-2	0-5	2-25	60-95	50-95	40-95	15-75	23-39	7-16
	31-63	Sandy loam, channery sandy clay loam, very channery clay loam	SC-SM, SM, SC, ML, CL, CL-ML	A-2, A-1, A-4, A-6	0-5	0-20	65-95	50-95	30-95	15-75	13-34	1-13
23D:												
Laidig----------	0-6	Sandy loam	SC-SM, SC, SM	A-2	0	2-5	85-95	80-95	45-65	25-40	13-25	1-8
	6-15	Sandy loam, fine sandy loam, loam, silt loam	SC-SM, SM, SC, ML, CL, CL-ML	A-2, A-4	0	2-5	85-95	80-95	45-95	25-85	13-30	1-11
	15-31	Sandy clay loam, channery loam, very channery clay loam	SC, CL	A-6, A-2	0-5	2-25	60-95	50-95	40-95	15-75	23-39	7-16
	31-63	Sandy loam, channery sandy clay loam, very channery clay loam	SC-SM, SM, SC, ML, CL, CL-ML	A-2, A-1, A-4, A-6	0-5	0-20	65-95	50-95	30-95	15-75	13-34	1-13

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
24C:												
Lily------------	0-7	Sandy loam	SC-SM, SC, SM	A-4, A-2	0	0-5	85-100	80-100	45-70	25-40	12-25	1-8
	7-13	Sandy loam, loam	SC-SM, SC, SM, CL, ML, CL-ML	A-2, A-4	0	0-5	85-100	80-100	50-95	25-75	12-30	1-11
	13-24	Clay loam, sandy clay loam, loam	CL, SC	A-6, A-2	0	0-5	85-100	80-100	65-100	30-80	23-39	7-16
	24-30	Sandy loam, sandy clay loam, loam, gravelly loamy sand, channery fine sandy loam	SC-SM, SC, SM, CL, ML, CL-ML, SW-SC, SW-SM	A-2, A-4, A-1	0	0-10	70-100	60-100	30-95	10-75	12-30	1-11
	30-40	Bedrock			---	---	---	---	---	---	---	---
24D:												
Lily------------	0-7	Sandy loam	SC-SM, SC, SM	A-4, A-2	0	0-5	85-100	80-100	45-70	25-40	12-25	1-8
	7-13	Sandy loam, loam	SC-SM, SC, SM, CL, ML, CL-ML	A-2, A-4	0	0-5	85-100	80-100	50-95	25-75	12-30	1-11
	13-24	Clay loam, sandy clay loam, loam	CL, SC	A-6, A-2	0	0-5	85-100	80-100	65-100	30-80	23-39	7-16
	24-30	Sandy loam, sandy clay loam, loam, gravelly loamy sand, channery fine sandy loam	SC-SM, SC, SM, CL, ML, CL-ML, SW-SC, SW-SM	A-2, A-4, A-1	0	0-10	70-100	60-100	30-95	10-75	12-30	1-11
	30-40	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
24E:												
Lily------------	0-7	Sandy loam	SC-SM, SC, SM	A-4, A-2	0	0-5	85-100	80-100	45-70	25-40	12-25	1-8
	7-13	Sandy loam, loam	SC-SM, SC, SM, CL, ML, CL-ML	A-2, A-4	0	0-5	85-100	80-100	50-95	25-75	12-30	1-11
	13-24	Clay loam, sandy clay loam, loam	CL, SC	A-6, A-2	0	0-5	85-100	80-100	65-100	30-80	23-39	7-16
	24-30	Sandy loam, sandy clay loam, loam, gravelly loamy sand, channery fine sandy loam	SC-SM, SC, SM, CL, ML, CL-ML, SW-SC, SW-SM	A-2, A-4, A-1	0	0-10	70-100	60-100	30-95	10-75	12-30	1-11
	30-40	Bedrock			---	---	---	---	---	---	---	---
25A:												
Maurertown------	0-6	Silt loam	CL	A-6, A-4	0	0	80-100	75-100	65-100	50-90	25-36	9-16
	6-18	Silty clay loam, silt loam, loam, clay loam	CL	A-6, A-4, A-7	0	0	80-100	75-100	65-100	45-95	28-48	9-25
	18-41	Silty clay, silty clay loam, clay, clay loam	CH, CL	A-7	0	0	80-100	75-100	70-100	55-95	44-66	22-39
	41-62	Silty clay loam, silty clay, clay, clay loam	CL, CH	A-6	0	0	80-100	75-100	70-100	55-95	39-66	18-39
26A:												
Melvin----------	0-6	Silt loam	CL, CL-ML	A-6, A-4	0	0	95-100	90-100	85-100	65-90	21-36	4-16
	6-31	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4	0	0	95-100	90-100	85-100	65-95	21-44	4-22
	31-62	Silt loam, silty clay loam, gravelly loam	CL, ML, CL-ML, SC, SM, SC-SM	A-6, A-7, A-4	0	0	80-100	70-100	60-100	45-95	18-48	2-25

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
27D:												
Newbern---------	0-4	Silt loam	CL-ML, CL	A-4	0	0-5	85-100	80-100	70-90	55-80	16-31	3-11
	4-11	Channery silt loam, channery loam, loam	SC, SC-SM, CL, CL-ML, GP-GC, GC, GC-GM	A-4, A-2, A-1	0	0-5	35-95	15-90	10-90	10-80	16-31	3-11
	11-15	Weathered bedrock			---	---	---	---	---	---	---	---
	15-25	Bedrock			---	---	---	---	---	---	---	---
Westmoreland----	0-8	Silt loam	CL, CL-ML	A-4	0	0-5	80-95	75-95	70-95	55-85	16-31	3-11
	8-16	Silt loam, loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0-5	80-95	75-95	65-95	45-90	16-36	3-14
	16-34	Silty clay loam, silt loam, channery loam	CL, SC	A-6, A-4	0	0-5	70-95	60-95	50-95	35-90	25-39	8-19
	34-39	Channery silty clay loam, silt loam, extremely channery loam	CL, GC	A-6, A-4, A-2	0	0-15	40-95	25-95	20-95	15-90	25-39	8-19
	39-47	Extremely channery silt loam, very channery silty clay loam, extremely channery loam	GP-GC, GC	A-2	0	0-20	30-55	10-40	5-40	5-35	23-39	7-16
	47-57	Bedrock			---	---	---	---	---	---	---	---
27E:												
Newbern---------	0-4	Silt loam	CL-ML, CL	A-4	0	0-5	85-100	80-100	70-90	55-80	16-31	3-11
	4-11	Channery silt loam, channery loam, loam	SC, SC-SM, CL, CL-ML, GP-GC, GC, GC-GM	A-4, A-2, A-1	0	0-5	35-95	15-90	10-90	10-80	16-31	3-11
	11-15	Weathered bedrock			---	---	---	---	---	---	---	---
	15-25	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
27E:												
Westmoreland----	0-8	Silt loam	CL, CL-ML	A-4	0	0-5	80-95	75-95	70-95	55-85	16-31	3-11
	8-16	Silt loam, loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0-5	80-95	75-95	65-95	45-90	16-36	3-14
	16-34	Silty clay loam, silt loam, channery loam	CL, SC	A-6, A-4	0	0-5	70-95	60-95	50-95	35-90	25-39	8-19
	34-39	Channery silty clay loam, silt loam, extremely channery loam	CL, GC	A-6, A-4, A-2	0	0-15	40-95	25-95	20-95	15-90	25-39	8-19
	39-47	Extremely channery silt loam, very channery silty clay loam, extremely channery loam	GP-GC, GC	A-2	0	0-20	30-55	10-40	5-40	5-35	23-39	7-16
	47-57	Bedrock			---	---	---	---	---	---	---	---
28.												
Pits, quarries												
29C:												
Poynor----------	0-6	Very gravelly silt loam	GC-GM, GC	A-1, A-2, A-4	0	0-5	45-60	25-45	25-45	20-40	16-31	3-11
	6-30	Extremely gravelly loam, very gravelly silty clay loam, extremely gravelly silt loam	GC, GP-GC, SC	A-2, A-6	0	0-15	35-60	15-50	10-50	10-45	25-34	8-13
	30-62	Clay, silty clay	MH, CH, CL	A-7	0	0-5	85-100	80-100	75-100	60-95	43-70	18-33

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
29D:												
Poynor----------	0-6	Very gravelly silt loam	GC-GM, GC	A-1, A-2, A-4	0	0-5	45-60	25-45	25-45	20-40	16-31	3-11
	6-30	Extremely gravelly loam, very gravelly silty clay loam, extremely gravelly silt loam	GC, GP-GC, SC	A-2, A-6	0	0-15	35-60	15-50	10-50	10-45	25-34	8-13
	30-62	Clay, silty clay	MH, CH, CL	A-7	0	0-5	85-100	80-100	75-100	60-95	43-70	18-33
29E:												
Poynor----------	0-6	Very gravelly silt loam	GC-GM, GC	A-1, A-2, A-4	0	0-5	45-60	25-45	25-45	20-40	16-31	3-11
	6-30	Extremely gravelly loam, very gravelly silty clay loam, extremely gravelly silt loam	GC, GP-GC, SC	A-2, A-6	0	0-15	35-60	15-50	10-50	10-45	25-34	8-13
	30-62	Clay, silty clay	MH, CH, CL	A-7	0	0-5	85-100	80-100	75-100	60-95	43-70	18-33
30F:												
Rock outcrop.												
Newbern---------	0-4	Silt loam	CL-ML, CL	A-4	0	0-5	85-100	80-100	70-90	55-80	16-31	3-11
	4-11	Channery silt loam, channery loam, loam	SC, SC-SM, CL, CL-ML, GP-GC, GC, GC-GM	A-4, A-2, A-1	0	0-5	35-95	15-90	10-90	10-80	16-31	3-11
	11-15	Weathered bedrock			---	---	---	---	---	---	---	---
	15-25	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
31B:												
Shelocta--------	0-8	Silt loam	CL-ML, CL	A-4	0	0-5	85-95	80-95	70-95	55-85	16-31	3-11
	8-34	Silt loam, silty clay loam, channery silty clay loam, very channery silt loam	CL, SC	A-6, A-4	0	0-15	60-95	50-95	45-90	35-85	23-38	7-15
	34-46	Silty clay loam, silt loam, channery silty clay loam, very channery silt loam	CL, SC	A-6, A-4	0	0-15	60-95	50-95	45-90	35-85	23-38	7-15
	46-62	Channery silty clay loam, silt loam, silty clay loam, very channery silt loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-20	60-95	50-95	45-90	35-85	21-38	6-15
31C:												
Shelocta--------	0-8	Silt loam	CL-ML, CL	A-4	0	0-5	85-95	80-95	70-95	55-85	16-31	3-11
	8-34	Silt loam, silty clay loam, channery silty clay loam, very channery silt loam	CL, SC	A-6, A-4	0	0-15	60-95	50-95	45-90	35-85	23-38	7-15
	34-46	Silty clay loam, silt loam, channery silty clay loam, very channery silt loam	CL, SC	A-6, A-4	0	0-15	60-95	50-95	45-90	35-85	23-38	7-15
	46-62	Channery silty clay loam, silt loam, silty clay loam, very channery silt loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-20	60-95	50-95	45-90	35-85	21-38	6-15

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
31D:												
Shelocta--------	0-8	Silt loam	CL-ML, CL	A-4	0	0-5	85-95	80-95	70-95	55-85	16-31	3-11
	8-34	Silt loam, silty clay loam, channery silty clay loam, very channery silt loam	CL, SC	A-6, A-4	0	0-15	60-95	50-95	45-90	35-85	23-38	7-15
	34-46	Silty clay loam, silt loam, channery silty clay loam, very channery silt loam	CL, SC	A-6, A-4	0	0-15	60-95	50-95	45-90	35-85	23-38	7-15
	46-62	Channery silty clay loam, silt loam, silty clay loam, very channery silt loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-20	60-95	50-95	45-90	35-85	21-38	6-15
31E:												
Shelocta--------	0-8	Silt loam	CL-ML, CL	A-4	0	0-5	85-95	80-95	70-95	55-85	16-31	3-11
	8-34	Silt loam, silty clay loam, channery silty clay loam, very channery silt loam	CL, SC	A-6, A-4	0	0-15	60-95	50-95	45-90	35-85	23-38	7-15
	34-46	Silty clay loam, silt loam, channery silty clay loam, very channery silt loam	CL, SC	A-6, A-4	0	0-15	60-95	50-95	45-90	35-85	23-38	7-15
	46-62	Channery silty clay loam, silt loam, silty clay loam, very channery silt loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-20	60-95	50-95	45-90	35-85	21-38	6-15

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
32B:												
Shottower-------	0-9	Loam	CL-ML, CL	A-4	0	0-2	85-100	75-100	65-95	45-75	16-25	5-9
	9-21	Clay loam, sandy clay loam, silty clay loam, clay, silty clay	CL, SC	A-6, A-2	0	0-10	90-100	85-100	70-100	30-95	27-42	10-18
	21-62	Clay, silty clay, silty clay loam, gravelly silty clay, very gravelly clay loam	CL, CH, SC	A-7, A-6, A-2	0	0-10	50-100	30-100	25-100	10-95	31-56	13-26
32C:												
Shottower-------	0-9	Loam	CL-ML, CL	A-4	0	0-2	85-100	75-100	65-95	45-75	16-25	5-9
	9-21	Clay loam, sandy clay loam, silty clay loam, clay, silty clay	CL, SC	A-6, A-2	0	0-10	90-100	85-100	70-100	30-95	27-42	10-18
	21-62	Clay, silty clay, silty clay loam, gravelly silty clay, very gravelly clay loam	CL, CH, SC	A-7, A-6, A-2	0	0-10	50-100	30-100	25-100	10-95	31-56	13-26
32D:												
Shottower-------	0-9	Loam	CL-ML, CL	A-4	0	0-2	85-100	75-100	65-95	45-75	16-25	5-9
	9-21	Clay loam, sandy clay loam, silty clay loam, clay, silty clay	CL, SC	A-6, A-2	0	0-10	90-100	85-100	70-100	30-95	27-42	10-18
	21-62	Clay, silty clay, silty clay loam, gravelly silty clay, very gravelly clay loam	CL, CH, SC	A-7, A-6, A-2	0	0-10	50-100	30-100	25-100	10-95	31-56	13-26

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
33A:												
Sindion---------	0-17	Silt loam	CL, CL-ML	A-4	0	0-2	85-100	80-100	70-100	55-90	21-31	6-11
	17-42	Loam, silt loam, silty clay loam, clay loam	CL	A-6, A-4	0	0-10	90-100	85-100	75-100	50-95	23-39	7-16
	42-62	Loam, gravelly loam, silt loam, silty clay loam, gravelly clay loam, extremely gravelly sandy loam	CL, CL-ML, SC, SC-SM, GC, GC-GM, GW-GC	A-6, A-2, A-4	0	0-10	35-100	15-100	10-100	5-95	21-39	6-16
34:												
Slickens--------	0-60	Variable			---	---	---	---	---	---	---	---
35A:												
Speedwell-------	0-17	Fine sandy loam	SC, SC-SM	A-4, A-2	0	0	85-100	75-100	50-85	30-55	18-25	4-8
	17-41	Loam, silt loam, clay loam, silty clay loam, sandy clay loam	CL, SC	A-4, A-6, A-2	0	0-5	85-100	80-100	65-100	30-95	23-39	7-16
	41-62	Sandy loam, silt loam, clay loam, gravelly loam, extremely gravelly coarse sandy loam	SC, SC-SM, SM, ML, CL, CL-ML, GW-GC, GW-GM, GM, GC, GC-GM	A-2, A-4, A-6, A-1	0	0-15	35-100	15-100	10-100	5-90	14-39	2-16

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
36D:												
Sylco	0-6	Channery silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-15	65-80	55-75	45-75	35-65	21-31	6-11
	6-31	Very channery silt loam, channery silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-15	60-85	45-80	40-80	35-70	21-31	6-11
	31-36	Extremely channery silt loam, very channery silt loam	GC, GC-GM, SC, SC-SM	A-2, A-4	0	0-30	45-65	25-50	25-50	20-45	21-31	6-11
	36-46	Bedrock			---	---	---	---	---	---	---	---
Sylvatus	0-2	Very channery silt loam	SC, SC-SM	A-4, A-2	0	0-15	50-65	35-55	30-55	25-50	16-31	3-11
	2-12	Extremely channery silt loam, very channery silt loam	GC, GC-GM, SC-SM, SC	A-2, A-4, A-1	0	0-20	35-65	15-55	15-55	10-50	16-31	3-11
	12-22	Bedrock			---	---	---	---	---	---	---	---
36E:												
Sylco	0-6	Channery silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-15	65-80	55-75	45-75	35-65	21-31	6-11
	6-31	Very channery silt loam, channery silt loam	SC, SC-SM, CL, CL-ML	A-4	0	0-15	60-85	45-80	40-80	35-70	21-31	6-11
	31-36	Extremely channery silt loam, very channery silt loam	GC, GC-GM, SC, SC-SM	A-2, A-4	0	0-30	45-65	25-50	25-50	20-45	21-31	6-11
	36-46	Bedrock			---	---	---	---	---	---	---	---
Sylvatus	0-2	Very channery silt loam	SC, SC-SM	A-4, A-2	0	0-15	50-65	35-55	30-55	25-50	16-31	3-11
	2-12	Extremely channery silt loam, very channery silt loam	GC, GC-GM, SC-SM, SC	A-2, A-4, A-1	0	0-20	35-65	15-55	15-55	10-50	16-31	3-11
	12-22	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
37B:												
Tate------------	0-6	Loam	CL, CL-ML, ML	A-4	0	0-5	85-100	80-100	70-95	50-75	12-31	1-11
	6-44	Clay loam, loam, gravelly sandy clay loam	CL, SC	A-6, A-4, A-2	0	0-15	70-100	55-100	45-100	20-80	23-39	7-16
	44-62	Gravelly loamy sand, loam, sandy loam, cobbly sandy loam	SM, SP-SC, SP-SM, SC, SC-SM, ML, CL, CL-ML	A-1, A-2, A-4	0	5-30	55-95	40-95	20-90	5-75	12-25	1-8
38B:												
Timberville-----	0-12	Silt loam	CL-ML, CL, ML	A-4	0	0-3	85-100	80-100	70-100	55-90	12-31	1-11
	12-25	Silt loam, silty clay loam, gravelly loam, very gravelly silt loam	CL, CL-ML, GC, GC-GM	A-4, A-6, A-2, A-1	0	0-5	45-100	30-100	25-100	15-95	19-39	5-16
	25-62	Clay, silty clay loam, silty clay, gravelly clay loam, very gravelly silty clay loam	CL, CH, GC, GM, MH	A-7, A-6, A-2	0	0-10	45-100	30-100	30-100	20-95	39-61	16-28
39B:												
Tumbling--------	0-9	Loam	CL-ML, CL, ML	A-4	0	0-2	80-100	75-100	65-95	45-75	13-25	2-9
	9-44	Clay loam, silty clay loam, clay, gravelly clay loam, cobbly clay loam	CL, SC	A-6	0	0-20	70-100	60-100	55-100	45-95	31-42	13-18
	44-62	Clay loam, silty clay loam, cobbly clay loam, gravelly clay	CL, SC	A-6	0	0-20	70-100	60-100	55-100	45-95	31-45	13-21

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
39C:												
Tumbling--------	0-9	Loam	CL-ML, CL, ML	A-4	0	0-2	80-100	75-100	65-95	45-75	13-25	2-9
	9-44	Clay loam, silty clay loam, clay, gravelly clay loam, cobbly clay loam	CL, SC	A-6	0	0-20	70-100	60-100	55-100	45-95	31-42	13-18
	44-62	Clay loam, silty clay loam, cobbly clay loam, gravelly clay	CL, SC	A-6	0	0-20	70-100	60-100	55-100	45-95	31-45	13-21
39D:												
Tumbling--------	0-9	Loam	CL-ML, CL, ML	A-4	0	0-2	80-100	75-100	65-95	45-75	13-25	2-9
	9-44	Clay loam, silty clay loam, clay, gravelly clay loam, cobbly clay loam	CL, SC	A-6	0	0-20	70-100	60-100	55-100	45-95	31-42	13-18
	44-62	Clay loam, silty clay loam, cobbly clay loam, gravelly clay	CL, SC	A-6	0	0-20	70-100	60-100	55-100	45-95	31-45	13-21
39E:												
Tumbling--------	0-9	Loam	CL-ML, CL, ML	A-4	0	0-2	80-100	75-100	65-95	45-75	13-25	2-9
	9-44	Clay loam, silty clay loam, clay, gravelly clay loam, cobbly clay loam	CL, SC	A-6	0	0-20	70-100	60-100	55-100	45-95	31-42	13-18
	44-62	Clay loam, silty clay loam, cobbly clay loam, gravelly clay	CL, SC	A-6	0	0-20	70-100	60-100	55-100	45-95	31-45	13-21

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
40C:												
Tumbling--------	0-9	Loam	CL-ML, CL, ML	A-4	0	0-10	90-100	85-100	70-95	50-75	13-25	2-9
	9-44	Clay loam, silty clay loam, cobbly clay, cobbly clay loam	CL	A-6	0	0-45	90-100	90-100	80-100	65-95	31-42	13-18
	44-62	Clay loam, silty clay loam, cobbly clay, cobbly clay loam	CL	A-6	0	0-45	90-100	90-100	80-100	65-95	31-45	13-21
40D:												
Tumbling--------	0-9	Loam	CL-ML, CL, ML	A-4	0	0-10	90-100	85-100	70-95	50-75	13-25	2-9
	9-44	Clay loam, silty clay loam, cobbly clay, cobbly clay loam	CL	A-6	0	0-45	90-100	90-100	80-100	65-95	31-42	13-18
	44-62	Clay loam, silty clay loam, cobbly clay, cobbly clay loam	CL	A-6	0	0-45	90-100	90-100	80-100	65-95	31-45	13-21
40E:												
Tumbling--------	0-9	Loam	CL-ML, CL, ML	A-4	0	0-10	90-100	85-100	70-95	50-75	13-25	2-9
	9-44	Clay loam, silty clay loam, cobbly clay, cobbly clay loam	CL	A-6	0	0-45	90-100	90-100	80-100	65-95	31-42	13-18
	44-62	Clay loam, silty clay loam, cobbly clay, cobbly clay loam	CL	A-6	0	0-45	90-100	90-100	80-100	65-95	31-45	13-21
41.												
Udorthents-Urban land												

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
42E:												
Weikert---------	0-2	Very channery silt loam	GC-GM	A-2, A-4	0	0-10	50-60	35-50	35-50	25-45	12-31	1-11
	2-12	Extremely channery silt loam, very channery silt loam, extremely channery loam	GP-GC, GP-GM, GC, GC-GM, GM, SM, SC, SC-SM	A-1, A-2, A-4	0	0-15	30-60	10-50	10-50	5-45	12-31	1-11
	12-22	Bedrock			---	---	---	---	---	---	---	---
Berks-----------	0-5	Very channery silt loam	GC-GM, GM, GC	A-2, A-4	0	0-20	55-65	40-55	40-55	30-50	12-31	1-11
	5-15	Channery silt loam, extremely channery loam, channery silty clay loam, very channery silt loam	GC-GM, GC, GM, SM, SC-SM, SC, ML, CL, CL-ML	A-4, A-1, A-2, A-6	0	0-30	40-85	20-75	20-75	15-75	12-36	1-14
	15-26	Very channery silt loam, extremely channery loam, very channery silty clay loam, extremely channery silt loam	GC-GM, GC, GM, SM, SC-SM, SC	A-2, A-1, A-6	0	0-30	40-65	20-55	20-55	15-50	12-36	1-14
	26-28	Extremely channery silt loam, very channery silt loam, extremely channery loam	GP-GC, GW-GC, GM, GC, GC-GM, SM, SC-SM, SC	A-1, A-2, A-4	0	0-40	30-65	10-55	10-55	5-50	12-25	1-8
	28-38	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
43B:												
Wheeling	0-9	Loam	CL, CL-ML	A-4	0	0	80-100	75-100	65-95	45-75	18-31	4-11
	9-49	Clay loam, sandy clay loam, loam, silt loam, silty clay loam	CL	A-6, A-4	0	0-5	85-100	80-100	70-100	50-95	23-39	7-16
	49-62	Sandy loam, very fine sandy loam	SC-SM, SC, CL, CL-ML	A-2, A-4	0	0-5	85-100	80-100	50-95	25-65	16-25	3-8
44B:												
Wheeling	0-9	Loam	CL, CL-ML	A-4	0	0	80-100	75-100	65-95	45-75	18-31	4-11
	9-49	Clay loam, sandy clay loam, loam, silt loam, silty clay loam	CL	A-6, A-4	0	0-5	85-100	80-100	70-100	50-95	23-39	7-16
	49-62	Sandy loam, very fine sandy loam	SC-SM, SC, CL, CL-ML	A-2, A-4	0	0-5	85-100	80-100	50-95	25-65	16-25	3-8
Urban land.												
45A:												
Wolfgap	0-11	Clay loam	CL	A-6	0	0	80-100	75-100	70-100	55-80	31-39	11-16
	11-58	Sandy clay loam, clay loam, silt loam, gravelly loam	SC, CL	A-4, A-6, A-2	0	0-5	70-100	55-100	45-100	20-90	23-39	7-16
	58-72	Extremely gravelly fine sandy loam, extremely gravelly loamy sand, very gravelly loam, gravelly silt loam	GP-GC, GP-GM, GC-GM, SC-SM, SM, CL-ML, ML	A-1, A-2, A-4	0	0-15	35-80	15-75	10-75	5-70	14-21	2-6

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
46C:												
Wurno-----------	0-5	Silt loam	CL-ML, CL	A-4	0	0-1	80-95	75-90	70-90	55-80	16-31	3-11
	5-11	Channery silt loam, silty clay loam, extremely channery silt loam	CL, SC, GC, GP-GC	A-6, A-4, A-2	0	0-5	30-90	5-90	5-90	5-85	25-39	8-16
	11-22	Very channery silt loam, very channery silty clay loam, extremely channery silt loam	GC, SC, GW-GC	A-2, A-4, A-6	0	0-5	30-60	5-50	5-50	5-50	25-39	8-16
	22-29	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GC, GP-GC, SC-SM, SC	A-2, A-1, A-4	0	0-5	30-60	5-50	5-50	5-45	16-31	3-11
	29-33	Weathered bedrock			---	---	---	---	---	---	---	---
	33-44	Bedrock			---	---	---	---	---	---	---	---
Newbern---------	0-4	Silt loam	CL-ML, CL	A-4	0	0-5	85-100	80-100	70-90	55-80	16-31	3-11
	4-11	Channery silt loam, channery loam, loam	SC, SC-SM, CL, CL-ML, GP-GC, GC, GC-GM	A-4, A-2, A-1	0	0-5	35-95	15-90	10-90	10-80	16-31	3-11
	11-15	Weathered bedrock			---	---	---	---	---	---	---	---
	15-25	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
46D:												
Wurno-----------	0-5	Silt loam	CL-ML, CL	A-4	0	0-1	80-95	75-90	70-90	55-80	16-31	3-11
	5-11	Channery silt loam, silty clay loam, extremely channery silt loam	CL, SC, GC, GP-GC	A-6, A-4, A-2	0	0-5	30-90	5-90	5-90	5-85	25-39	8-16
	11-22	Very channery silt loam, very channery silty clay loam, extremely channery silt loam	GC, SC, GW-GC	A-2, A-4, A-6	0	0-5	30-60	5-50	5-50	5-50	25-39	8-16
	22-29	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GC, GP-GC, SC-SM, SC	A-2, A-1, A-4	0	0-5	30-60	5-50	5-50	5-45	16-31	3-11
	29-33	Weathered bedrock			---	---	---	---	---	---	---	---
	33-44	Bedrock			---	---	---	---	---	---	---	---
Newbern---------	0-4	Silt loam	CL-ML, CL	A-4	0	0-5	85-100	80-100	70-90	55-80	16-31	3-11
	4-11	Channery silt loam, channery loam, loam	SC, SC-SM, CL, CL-ML, GP-GC, GC, GC-GM	A-4, A-2, A-1	0	0-5	35-95	15-90	10-90	10-80	16-31	3-11
	11-15	Weathered bedrock			---	---	---	---	---	---	---	---
	15-25	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
46E:												
Wurno-----------	0-5	Silt loam	CL-ML, CL	A-4	0	0-1	80-95	75-90	70-90	55-80	16-31	3-11
	5-11	Channery silt loam, silty clay loam, extremely channery silt loam	CL, SC, GC, GP-GC	A-6, A-4, A-2	0	0-5	30-90	5-90	5-90	5-85	25-39	8-16
	11-22	Very channery silt loam, very channery silty clay loam, extremely channery silt loam	GC, SC, GW-GC	A-2, A-4, A-6	0	0-5	30-60	5-50	5-50	5-50	25-39	8-16
	22-29	Extremely channery silt loam, very channery silt loam, extremely channery loam	GC-GM, GC, GP-GC, SC-SM, SC	A-2, A-1, A-4	0	0-5	30-60	5-50	5-50	5-45	16-31	3-11
	29-33	Weathered bedrock			---	---	---	---	---	---	---	---
	33-44	Bedrock			---	---	---	---	---	---	---	---
Newbern---------	0-4	Silt loam	CL-ML, CL	A-4	0	0-5	85-100	80-100	70-90	55-80	16-31	3-11
	4-11	Channery silt loam, channery loam, loam	SC, SC-SM, CL, CL-ML, GP-GC, GC, GC-GM	A-4, A-2, A-1	0	0-5	35-95	15-90	10-90	10-80	16-31	3-11
	11-15	Weathered bedrock			---	---	---	---	---	---	---	---
	15-25	Bedrock			---	---	---	---	---	---	---	---
47B:												
Wyrick----------	0-9	Silt loam	CL, CL-ML	A-4	0	0-2	85-100	80-100	70-100	55-90	21-31	6-15
	9-17	Silt loam, loam, silty clay loam	CL	A-6, A-4	0	0-5	85-100	85-100	70-100	50-95	25-39	8-20
	17-51	Silty clay loam, loam, silt loam, clay loam	CL	A-6, A-4	0	0-10	85-100	85-100	70-100	50-95	25-43	8-25
	51-62	Silty clay, clay, silty clay loam	MH, CH, CL	A-7, A-6	0	0	85-100	75-100	70-100	60-95	31-61	11-40

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
47B:												
Marbie----------	0-11	Silt loam	CL	A-4	0	0-3	85-100	80-100	70-100	55-90	21-31	6-11
	11-21	Silt loam, loam, clay loam, silty clay loam	CL	A-4, A-6	0	0-3	85-100	80-100	70-100	50-95	25-39	8-16
	21-57	Silty clay loam, silt loam, clay loam, gravelly loam	CL, SC	A-4, A-6	0	0-6	70-100	60-100	50-100	35-95	25-39	8-16
	57-62	Silty clay loam, silty clay, clay, gravelly clay loam	CL, SC	A-6, A-7	0	0	75-100	65-100	60-100	45-95	31-57	11-26
47C:												
Wyrick----------	0-9	Silt loam	CL, CL-ML	A-4	0	0-2	85-100	80-100	70-100	55-90	21-31	6-15
	9-17	Silt loam, loam, silty clay loam	CL	A-6, A-4	0	0-5	85-100	85-100	70-100	50-95	25-39	8-20
	17-51	Silty clay loam, loam, silt loam, clay loam	CL	A-6, A-4	0	0-10	85-100	85-100	70-100	50-95	25-43	8-25
	51-62	Silty clay, clay, silty clay loam	MH, CH, CL	A-7, A-6	0	0	85-100	75-100	70-100	60-95	31-61	11-40
Marbie----------	0-11	Silt loam	CL	A-4	0	0-3	85-100	80-100	70-100	55-90	21-31	6-11
	11-21	Silt loam, loam, clay loam, silty clay loam	CL	A-4, A-6	0	0-3	85-100	80-100	70-100	50-95	25-39	8-16
	21-57	Silty clay loam, silt loam, clay loam, gravelly loam	CL, SC	A-4, A-6	0	0-6	70-100	60-100	50-100	35-95	25-39	8-16
	57-62	Silty clay loam, silty clay, clay, gravelly clay loam	CL, SC	A-6, A-7	0	0	75-100	65-100	60-100	45-95	31-57	11-26

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
47D:												
Wyrick----------	0-9	Silt loam	CL, CL-ML	A-4	0	0-2	85-100	80-100	70-100	55-90	21-31	6-15
	9-17	Silt loam, loam, silty clay loam	CL	A-6, A-4	0	0-5	85-100	85-100	70-100	50-95	25-39	8-20
	17-51	Silty clay loam, loam, silt loam, clay loam	CL	A-6, A-4	0	0-10	85-100	85-100	70-100	50-95	25-43	8-25
	51-62	Silty clay, clay, silty clay loam	MH, CH, CL	A-7, A-6	0	0	85-100	75-100	70-100	60-95	31-61	11-40
Marbie----------	0-11	Silt loam	CL	A-4	0	0-3	85-100	80-100	70-100	55-90	21-31	6-11
	11-21	Silt loam, loam, clay loam, silty clay loam	CL	A-4, A-6	0	0-3	85-100	80-100	70-100	50-95	25-39	8-16
	21-57	Silty clay loam, silt loam, clay loam, gravelly loam	CL, SC	A-4, A-6	0	0-6	70-100	60-100	50-100	35-95	25-39	8-16
	57-62	Silty clay loam, silty clay, clay, gravelly clay loam	CL, SC	A-6, A-7	0	0	75-100	65-100	60-100	45-95	31-57	11-26
W.												
Water												

Table 16.—Physical Soil Properties

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
								Kw	Kf	T		
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
1B:												
Austinville----------	0-6	27-40	1.35-1.45	4.00-14.00	0.13-0.15	3.0-6.0	0.5-2.5	.28	.28	5	7	38
	6-62	35-85	1.30-1.40	4.00-14.00	0.10-0.15	3.0-6.0	0.0-0.5	.20	.20			
1C:												
Austinville----------	0-6	27-40	1.35-1.45	4.00-14.00	0.13-0.15	3.0-6.0	0.5-2.5	.28	.28	5	7	38
	6-62	35-85	1.30-1.40	4.00-14.00	0.10-0.15	3.0-6.0	0.0-0.5	.20	.20			
1D:												
Austinville----------	0-6	27-40	1.35-1.45	4.00-14.00	0.13-0.15	3.0-6.0	0.5-2.5	.28	.28	5	7	38
	6-62	35-85	1.30-1.40	4.00-14.00	0.10-0.15	3.0-6.0	0.0-0.5	.20	.20			
1E:												
Austinville----------	0-6	27-40	1.35-1.45	4.00-14.00	0.13-0.15	3.0-6.0	0.5-2.5	.28	.28	5	7	38
	6-62	35-85	1.30-1.40	4.00-14.00	0.10-0.15	3.0-6.0	0.0-0.5	.20	.20			
2E:												
Austinville----------	0-6	27-40	1.35-1.45	4.00-14.00	0.13-0.15	3.0-6.0	0.5-2.5	.28	.28	5	7	38
	6-62	35-85	1.30-1.40	4.00-14.00	0.10-0.15	3.0-6.0	0.0-0.5	.20	.20			
Rock outcrop.												
3D:												
Berks----------------	0-5	5-27	1.20-1.50	4.00-42.00	0.09-0.12	0.0-2.9	0.5-2.0	.15	.43	3	8	0
	5-15	5-32	1.20-1.60	4.00-42.00	0.04-0.18	0.0-2.9	0.0-0.5	.24	.49			
	15-26	5-32	1.20-1.60	4.00-42.00	0.04-0.12	0.0-2.9	0.0-0.5	.15	.49			
	26-28	5-20	1.20-1.60	14.00-42.00	0.02-0.12	0.0-2.9	0.0-0.5	.10	.55			
	28-38	---	---	1.40-42.00	0.00-0.00	---	---	---	---			
Weikert--------------	0-2	5-27	1.20-1.40	14.00-42.00	0.09-0.11	0.0-2.9	0.5-2.0	.15	.43	2	6	48
	2-12	5-27	1.20-1.40	14.00-42.00	0.02-0.11	0.0-2.9	0.0-0.5	.10	.55			
	12-22	---	---	1.40-42.00	0.00-0.00	---	---	---	---			
4B:												
Botetourt------------	0-7	7-27	1.35-1.60	4.00-14.00	0.15-0.21	0.0-2.9	1.0-3.0	.28	.28	5	5	56
	7-18	7-30	1.45-1.70	4.00-14.00	0.08-0.22	0.0-2.9	0.5-2.0	.37	.37			
	18-37	18-35	1.45-1.70	4.00-14.00	0.08-0.19	0.0-2.9	0.0-0.5	.32	.32			
	37-48	18-35	1.45-1.70	4.00-14.00	0.08-0.19	0.0-2.9	0.0-0.5	.24	.37			
	48-62	12-35	1.45-1.70	4.00-14.00	0.07-0.17	0.0-2.9	0.0-0.5	.20	.37			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
4C:												
Botetourt------------	0-7	7-27	1.35-1.60	4.00-14.00	0.15-0.21	0.0-2.9	1.0-3.0	.28	.28	5	5	56
	7-18	7-30	1.45-1.70	4.00-14.00	0.08-0.22	0.0-2.9	0.5-2.0	.37	.37			
	18-37	18-35	1.45-1.70	4.00-14.00	0.08-0.19	0.0-2.9	0.0-0.5	.32	.32			
	37-48	18-35	1.45-1.70	4.00-14.00	0.08-0.19	0.0-2.9	0.0-0.5	.24	.37			
	48-62	12-35	1.45-1.70	4.00-14.00	0.07-0.17	0.0-2.9	0.0-0.5	.20	.37			
5E:												
Brushy---------------	0-7	10-20	1.20-1.40	4.00-14.00	0.02-0.05	0.0-2.9	0.5-2.5	.10	.37	2	8	0
	7-13	10-20	1.40-1.60	4.00-14.00	0.02-0.13	0.0-2.9	0.0-0.5	.15	.49			
	13-34	12-35	1.40-1.60	4.00-14.00	0.01-0.11	0.0-2.9	0.0-0.5	.15	.43			
	34-44	---	---	0.00-4.00	0.00-0.00	---	---	---	---			
6E:												
Calvin---------------	0-5	10-27	1.20-1.40	14.00-42.00	0.15-0.18	0.0-2.9	0.5-2.0	.28	.43	3	6	48
	5-22	10-27	1.40-1.60	14.00-42.00	0.08-0.15	0.0-2.9	0.0-0.5	.17	.49			
	22-28	10-27	1.40-1.60	14.00-42.00	0.03-0.11	0.0-2.9	0.0-0.5	.10	.49			
	28-38	---	---	1.40-42.00	---	---	---	---	---			
7C:												
Carbo----------------	0-5	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.37	.37	2	5	56
	5-24	60-80	1.30-1.45	0.42-1.40	0.10-0.12	6.0-8.9	0.0-0.5	.17	.17			
	24-34	---	---	0.00-4.00	0.00-0.00	---	---	---	---			
7D:												
Carbo----------------	0-5	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.37	.37	2	5	56
	5-24	60-80	1.30-1.45	0.42-1.40	0.10-0.12	6.0-8.9	0.0-0.5	.17	.17			
	24-34	---	---	0.00-4.00	0.00-0.00	---	---	---	---			
8D:												
Carbo----------------	0-5	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.37	.37	2	5	56
	5-24	60-80	1.30-1.45	0.42-1.40	0.10-0.12	6.0-8.9	0.0-0.5	.17	.17			
	24-34	---	---	0.00-4.00	0.00-0.00	---	---	---	---			
Rock outcrop.												
8E:												
Carbo----------------	0-5	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.37	.37	2	5	56
	5-24	60-80	1.30-1.45	0.42-1.40	0.10-0.12	6.0-8.9	0.0-0.5	.17	.17			
	24-34	---	---	0.00-4.00	0.00-0.00	---	---	---	---			
Rock outcrop.												

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
9E:												
Carbo	0-5	27-40	1.20-1.40	4.00-14.00	0.13-0.15	3.0-5.9	0.5-2.5	.37	.37	2	5	56
	5-24	60-80	1.30-1.45	0.42-1.40	0.10-0.12	6.0-8.9	0.0-0.5	.17	.17			
	24-34	---	---	0.00-4.00	0.00-0.00	---	---	---	---			
Rock outcrop.												
10C:												
Chiswell	0-4	10-27	1.20-1.40	4.00-14.00	0.12-0.18	0.0-2.9	0.5-2.0	.28	.43	2	8	0
	4-8	10-27	1.20-1.40	4.00-14.00	0.11-0.18	0.0-2.9	0.0-0.5	.28	.49			
	8-17	10-35	1.20-1.60	4.00-14.00	0.02-0.12	0.0-2.9	0.0-0.5	.15	.49			
	17-27	---	---	0.42-42.00	0.00-0.00	---	---	---	---			
Litz	0-5	10-27	1.20-1.50	4.00-14.00	0.18-0.22	0.0-2.9	0.5-2.0	.37	.37	3	8	0
	5-12	10-35	1.20-1.50	4.00-14.00	0.02-0.13	0.0-2.9	0.0-0.5	.24	.49			
	12-24	10-35	1.20-1.50	4.00-14.00	0.02-0.11	0.0-2.9	0.0-0.5	.10	.49			
	24-36	---	---	0.42-42.00	0.00-0.00	---	---	---	---			
	36-46	---	---	0.42-42.00	0.00-0.00	---	---	---	---			
Groseclose	0-9	7-27	1.25-1.55	14.00-42.00	0.17-0.22	0.0-2.9	0.5-2.5	.43	.43	4	5	56
	9-54	35-60	1.35-1.60	0.42-1.40	0.09-0.15	6.0-9.0	0.0-0.5	.20	.20			
	54-62	30-50	1.35-1.60	0.42-1.40	0.09-0.15	6.0-9.0	0.0-0.5	.28	.37			
10D:												
Chiswell	0-4	10-27	1.20-1.40	4.00-14.00	0.12-0.18	0.0-2.9	0.5-2.0	.28	.43	2	8	0
	4-8	10-27	1.20-1.40	4.00-14.00	0.11-0.18	0.0-2.9	0.0-0.5	.28	.49			
	8-17	10-35	1.20-1.60	4.00-14.00	0.02-0.12	0.0-2.9	0.0-0.5	.15	.49			
	17-27	---	---	0.42-42.00	0.00-0.00	---	---	---	---			
Litz	0-5	10-27	1.20-1.50	4.00-14.00	0.18-0.22	0.0-2.9	0.5-2.0	.37	.37	3	8	0
	5-12	10-35	1.20-1.50	4.00-14.00	0.02-0.13	0.0-2.9	0.0-0.5	.24	.49			
	12-24	10-35	1.20-1.50	4.00-14.00	0.02-0.11	0.0-2.9	0.0-0.5	.10	.49			
	24-36	---	---	0.42-42.00	0.00-0.00	---	---	---	---			
	36-46	---	---	0.42-42.00	0.00-0.00	---	---	---	---			
Groseclose	0-9	7-27	1.25-1.55	14.00-42.00	0.17-0.22	0.0-2.9	0.5-2.5	.43	.43	4	5	56
	9-54	35-60	1.35-1.60	0.42-1.40	0.09-0.15	6.0-9.0	0.0-0.5	.20	.20			
	54-62	30-50	1.35-1.60	0.42-1.40	0.09-0.15	6.0-9.0	0.0-0.5	.28	.37			
10E:												
Chiswell	0-4	10-27	1.20-1.40	4.00-14.00	0.12-0.18	0.0-2.9	0.5-2.0	.28	.43	2	8	0
	4-8	10-27	1.20-1.40	4.00-14.00	0.11-0.18	0.0-2.9	0.0-0.5	.28	.49			
	8-17	10-35	1.20-1.60	4.00-14.00	0.02-0.12	0.0-2.9	0.0-0.5	.15	.49			
	17-27	---	---	0.42-42.00	0.00-0.00	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
10E:												
Litz-----------------	0-5	10-27	1.20-1.50	4.00-14.00	0.18-0.22	0.0-2.9	0.5-2.0	.37	.37	3	8	0
	5-12	10-35	1.20-1.50	4.00-14.00	0.02-0.13	0.0-2.9	0.0-0.5	.24	.49			
	12-24	10-35	1.20-1.50	4.00-14.00	0.02-0.11	0.0-2.9	0.0-0.5	.10	.49			
	24-36	---	---	0.42-42.00	0.00-0.00	---	---	---	---			
	36-46	---	---	0.42-42.00	0.00-0.00	---	---	---	---			
Groseclose-----------	0-9	7-27	1.25-1.55	14.00-42.00	0.17-0.22	0.0-2.9	0.5-2.5	.43	.43	4	5	56
	9-54	35-60	1.35-1.60	0.42-1.40	0.09-0.15	6.0-9.0	0.0-0.5	.20	.20			
	54-62	30-50	1.35-1.60	0.42-1.40	0.09-0.15	6.0-9.0	0.0-0.5	.28	.37			
11D:												
Dekalb---------------	0-5	10-20	1.20-1.50	42.00-141.00	0.09-0.10	0.0-2.9	0.5-2.0	.15	.24	2	8	0
	5-24	7-18	1.20-1.50	42.00-141.00	0.05-0.15	0.0-2.9	0.0-0.5	.10	.32			
	24-31	5-15	1.20-1.50	42.00-141.00	0.01-0.05	0.0-2.9	0.0-0.5	.10	.37			
	31-41	---	---	0.00-4.00	0.00-0.00	---	---	---	---			
11E:												
Dekalb---------------	0-5	10-20	1.20-1.50	42.00-141.00	0.09-0.10	0.0-2.9	0.5-2.0	.15	.24	2	8	0
	5-24	7-18	1.20-1.50	42.00-141.00	0.05-0.15	0.0-2.9	0.0-0.5	.10	.32			
	24-31	5-15	1.20-1.50	42.00-141.00	0.01-0.05	0.0-2.9	0.0-0.5	.10	.37			
	31-41	---	---	0.00-4.00	0.00-0.00	---	---	---	---			
12B:												
Derroc---------------	0-8	5-15	1.40-1.65	14.00-141.00	0.09-0.14	0.0-2.9	1.0-3.0	.10	.17	3	8	0
	8-35	5-15	1.55-1.70	14.00-141.00	0.03-0.14	0.0-2.9	0.0-0.5	.10	.28			
	35-62	5-10	1.55-1.70	42.00-141.00	0.04-0.12	0.0-2.9	0.0-0.5	.10	.17			
13D:												
Drypond--------------	0-5	10-20	1.25-1.40	42.00-141.00	0.04-0.06	0.0-2.9	0.5-2.0	.10	.20	1	8	0
	5-13	12-25	1.20-1.40	42.00-141.00	0.02-0.11	0.0-2.9	0.0-0.5	.10	.20			
	13-18	10-25	1.20-1.40	42.00-141.00	0.01-0.07	0.0-2.9	0.0-0.5	.10	.24			
	18-28	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.												
13E:												
Drypond--------------	0-5	10-20	1.25-1.40	42.00-141.00	0.04-0.06	0.0-2.9	0.5-2.0	.10	.20	1	8	0
	5-13	12-25	1.20-1.40	42.00-141.00	0.02-0.11	0.0-2.9	0.0-0.5	.10	.20			
	13-18	10-25	1.20-1.40	42.00-141.00	0.01-0.07	0.0-2.9	0.0-0.5	.10	.24			
	18-28	---	---	0.00-4.00	---	---	---	---	---			
Rock outcrop.												
14.												
Dumps, mines												

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
15B:												
Frederick------------	0-8	13-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	4	6	48
	8-18	35-75	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
	18-51	40-80	1.20-1.50	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
	51-72	40-80	1.20-1.40	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
15C:												
Frederick------------	0-8	13-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	4	6	48
	8-18	35-75	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
	18-51	40-80	1.20-1.50	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
	51-72	40-80	1.20-1.40	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
15D:												
Frederick------------	0-8	13-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	4	6	48
	8-18	35-75	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
	18-51	40-80	1.20-1.50	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
	51-72	40-80	1.20-1.40	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
15E:												
Frederick------------	0-8	13-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	4	6	48
	8-18	35-75	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
	18-51	40-80	1.20-1.50	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
	51-72	40-80	1.20-1.40	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
15F:												
Frederick------------	0-8	13-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	4	6	48
	8-18	35-75	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
	18-51	40-80	1.20-1.50	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
	51-72	40-80	1.20-1.40	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
16B:												
Frederick------------	0-8	13-27	1.25-1.50	14.00-42.00	0.12-0.17	0.0-2.9	0.5-2.5	.20	.37	4	5	56
	8-18	35-75	1.20-1.50	4.00-14.00	0.06-0.15	3.0-5.9	0.0-0.5	.20	.20			
	18-51	40-80	1.20-1.50	4.00-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.15	.15			
	51-72	40-80	1.20-1.40	4.00-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.15	.15			
16C:												
Frederick------------	0-8	13-27	1.25-1.50	14.00-42.00	0.12-0.17	0.0-2.9	0.5-2.5	.20	.37	4	5	56
	8-18	35-75	1.20-1.50	4.00-14.00	0.06-0.15	3.0-5.9	0.0-0.5	.20	.20			
	18-51	40-80	1.20-1.50	4.00-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.15	.15			
	51-72	40-80	1.20-1.40	4.00-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.15	.15			
16D:												
Frederick------------	0-8	13-27	1.25-1.50	14.00-42.00	0.12-0.17	0.0-2.9	0.5-2.5	.20	.37	4	5	56
	8-18	35-75	1.20-1.50	4.00-14.00	0.06-0.15	3.0-5.9	0.0-0.5	.20	.20			
	18-51	40-80	1.20-1.50	4.00-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.15	.15			
	51-72	40-80	1.20-1.40	4.00-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.15	.15			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
16E:												
Frederick------------	0-8	13-27	1.25-1.50	14.00-42.00	0.12-0.17	0.0-2.9	0.5-2.5	.20	.37	4	5	56
	8-18	35-75	1.20-1.50	4.00-14.00	0.06-0.15	3.0-5.9	0.0-0.5	.20	.20			
	18-51	40-80	1.20-1.50	4.00-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.15	.15			
	51-72	40-80	1.20-1.40	4.00-14.00	0.06-0.14	3.0-5.9	0.0-0.5	.15	.15			
17C:												
Frederick------------	0-8	13-27	1.25-1.50	14.00-42.00	0.18-0.22	0.0-2.9	0.5-2.5	.37	.37	4	6	48
	8-18	35-75	1.20-1.50	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.20	.20			
	18-51	40-80	1.20-1.50	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
	51-72	40-80	1.20-1.40	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
Urban land.												
18E:												
Greenlee-------------	0-9	5-27	1.30-1.50	14.00-42.00	0.08-0.15	0.0-2.9	0.5-3.0	.10	.28	5	8	0
	9-50	5-27	1.40-1.60	14.00-42.00	0.07-0.15	0.0-2.9	0.0-0.5	.15	.37			
	50-65	5-20	1.40-1.60	14.00-42.00	0.05-0.17	0.0-2.9	0.0-0.5	.10	.43			
19B:												
Ingledove------------	0-9	15-27	1.20-1.40	4.00-14.00	0.14-0.21	0.0-2.9	1.0-3.0	.24	.24	5	6	48
	9-42	18-35	1.20-1.50	4.00-14.00	0.10-0.19	0.0-2.9	0.0-0.5	.32	.32			
	42-57	18-35	1.20-1.50	4.00-14.00	0.04-0.19	0.0-2.9	0.0-0.5	.32	.32			
	57-62	10-35	1.20-1.40	4.00-14.00	0.03-0.19	0.0-2.9	0.0-0.5	.17	.24			
20B:												
Ingledove------------	0-9	15-27	1.20-1.40	4.00-14.00	0.14-0.21	0.0-2.9	1.0-3.0	.24	.24	5	6	48
	9-42	18-35	1.20-1.50	4.00-14.00	0.10-0.19	0.0-2.9	0.0-0.5	.32	.32			
	42-57	18-35	1.20-1.50	4.00-14.00	0.04-0.19	0.0-2.9	0.0-0.5	.32	.32			
	57-62	10-35	1.20-1.40	4.00-14.00	0.03-0.19	0.0-2.9	0.0-0.5	.17	.24			
Urban land.												
21D:												
Konnarock------------	0-2	10-27	1.20-1.40	14.00-42.00	0.08-0.13	0.0-2.9	0.5-2.0	.15	.43	3	8	0
	2-23	15-27	1.20-1.60	14.00-42.00	0.05-0.18	0.0-2.9	0.5-1.0	.15	.43			
	23-27	15-27	1.20-1.60	14.00-42.00	0.02-0.13	0.0-2.9	0.0-0.5	.10	.49			
	27-37	---	---	0.00-0.42	0.00-0.00	---	---	---	---			
21E:												
Konnarock------------	0-2	10-27	1.20-1.40	14.00-42.00	0.08-0.13	0.0-2.9	0.5-2.0	.15	.43	3	8	0
	2-23	15-27	1.20-1.60	14.00-42.00	0.05-0.18	0.0-2.9	0.5-1.0	.15	.43			
	23-27	15-27	1.20-1.60	14.00-42.00	0.02-0.13	0.0-2.9	0.0-0.5	.10	.49			
	27-37	---	---	0.00-0.42	0.00-0.00	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
22B:												
Laidig	0-6	7-20	1.20-1.40	14.00-42.00	0.10-0.12	0.0-2.9	0.5-3.0	.24	.24	4	3	86
	6-15	7-25	1.20-1.40	14.00-42.00	0.10-0.20	0.0-2.9	0.0-0.5	.24	.24			
	15-31	18-35	1.30-1.50	4.00-42.00	0.07-0.17	0.0-2.9	0.0-0.5	.24	.28			
	31-63	7-30	1.40-1.70	0.42-4.00	0.07-0.12	0.0-2.9	0.0-0.5	.17	.20			
22C:												
Laidig	0-6	7-20	1.20-1.40	14.00-42.00	0.10-0.12	0.0-2.9	0.5-3.0	.24	.24	4	3	86
	6-15	7-25	1.20-1.40	14.00-42.00	0.10-0.20	0.0-2.9	0.0-0.5	.24	.24			
	15-31	18-35	1.30-1.50	4.00-42.00	0.07-0.17	0.0-2.9	0.0-0.5	.24	.28			
	31-63	7-30	1.40-1.70	0.42-4.00	0.07-0.12	0.0-2.9	0.0-0.5	.17	.20			
22D:												
Laidig	0-6	7-20	1.20-1.40	14.00-42.00	0.10-0.12	0.0-2.9	0.5-3.0	.24	.24	4	3	86
	6-15	7-25	1.20-1.40	14.00-42.00	0.10-0.20	0.0-2.9	0.0-0.5	.24	.24			
	15-31	18-35	1.30-1.50	4.00-42.00	0.07-0.17	0.0-2.9	0.0-0.5	.24	.28			
	31-63	7-30	1.40-1.70	0.42-4.00	0.07-0.12	0.0-2.9	0.0-0.5	.17	.20			
23C:												
Laidig	0-6	7-20	1.20-1.40	14.00-42.00	0.10-0.12	0.0-2.9	0.5-3.0	.24	.24	4	3	86
	6-15	7-25	1.20-1.40	14.00-42.00	0.10-0.20	0.0-2.9	0.0-0.5	.24	.24			
	15-31	18-35	1.30-1.50	4.00-42.00	0.07-0.17	0.0-2.9	0.0-0.5	.24	.28			
	31-63	7-30	1.40-1.70	0.42-4.00	0.07-0.12	0.0-2.9	0.0-0.5	.17	.20			
23D:												
Laidig	0-6	7-20	1.20-1.40	14.00-42.00	0.10-0.12	0.0-2.9	0.5-3.0	.24	.24	4	3	86
	6-15	7-25	1.20-1.40	14.00-42.00	0.10-0.20	0.0-2.9	0.0-0.5	.24	.24			
	15-31	18-35	1.30-1.50	4.00-42.00	0.07-0.17	0.0-2.9	0.0-0.5	.24	.28			
	31-63	7-30	1.40-1.70	0.42-4.00	0.07-0.12	0.0-2.9	0.0-0.5	.17	.20			
24C:												
Lily	0-7	5-20	1.20-1.40	4.00-42.00	0.10-0.13	0.0-2.9	0.5-2.5	.24	.24	2	8	0
	7-13	5-25	1.25-1.55	14.00-42.00	0.10-0.19	0.0-2.9	0.0-0.5	.32	.32			
	13-24	18-35	1.25-1.55	14.00-42.00	0.10-0.19	0.0-2.9	0.0-0.5	.37	.37			
	24-30	5-25	1.25-1.55	14.00-42.00	0.06-0.19	0.0-2.9	0.0-0.5	.32	.32			
	30-40	---	---	0.00-4.00	---	---	---	---	---			
24D:												
Lily	0-7	5-20	1.20-1.40	4.00-42.00	0.10-0.13	0.0-2.9	0.5-2.5	.24	.24	2	8	0
	7-13	5-25	1.25-1.55	14.00-42.00	0.10-0.19	0.0-2.9	0.0-0.5	.32	.32			
	13-24	18-35	1.25-1.55	14.00-42.00	0.10-0.19	0.0-2.9	0.0-0.5	.37	.37			
	24-30	5-25	1.25-1.55	14.00-42.00	0.06-0.19	0.0-2.9	0.0-0.5	.32	.32			
	30-40	---	---	0.00-4.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
24E:												
Lily----------------	0-7	5-20	1.20-1.40	4.00-42.00	0.10-0.13	0.0-2.9	0.5-2.5	.24	.24	2	8	0
	7-13	5-25	1.25-1.55	14.00-42.00	0.10-0.19	0.0-2.9	0.0-0.5	.32	.32			
	13-24	18-35	1.25-1.55	14.00-42.00	0.10-0.19	0.0-2.9	0.0-0.5	.37	.37			
	24-30	5-25	1.25-1.55	14.00-42.00	0.06-0.19	0.0-2.9	0.0-0.5	.32	.32			
	30-40	---	---	0.00-4.00	---	---	---	---	---			
25A:												
Maurertown-----------	0-6	18-27	1.25-1.35	4.00-14.00	0.17-0.24	0.0-2.9	2.0-4.0	.43	.43	4	5	56
	6-18	18-40	1.30-1.50	0.01-0.42	0.10-0.22	6.0-8.9	0.2-1.0	.32	.32			
	18-41	35-60	1.30-1.50	0.01-0.42	0.09-0.15	6.0-8.9	0.2-1.0	.32	.32			
	41-62	30-60	1.30-1.50	0.01-0.42	0.09-0.15	6.0-8.9	0.2-1.0	.32	.32			
26A:												
Melvin---------------	0-6	10-27	1.20-1.60	4.00-14.00	0.20-0.24	0.0-2.9	1.0-4.0	.43	.43	5	5	56
	6-31	10-35	1.30-1.60	4.00-14.00	0.14-0.22	0.0-2.9	0.5-2.0	.43	.43			
	31-62	7-40	1.40-1.70	4.00-14.00	0.11-0.22	0.0-2.9	0.2-1.0	.49	.49			
27D:												
Newbern--------------	0-4	10-27	1.20-1.50	4.00-14.00	0.18-0.20	0.0-2.9	0.5-2.5	.43	.43	2	8	0
	4-11	10-27	1.30-1.60	4.00-14.00	0.03-0.20	0.0-2.9	0.0-0.5	.24	.49			
	11-15	---	---	0.42-42.00	0.00-0.01	---	---	---	---			
	15-25	---	---	0.42-42.00	0.00-0.01	---	---	---	---			
Westmoreland---------	0-8	10-27	1.20-1.40	4.00-14.00	0.18-0.21	0.0-2.9	0.5-2.5	.28	.37	3	5	56
	8-16	10-32	1.20-1.40	4.00-14.00	0.13-0.21	0.0-2.9	0.0-0.5	.32	.43			
	16-34	20-35	1.20-1.50	4.00-14.00	0.10-0.21	0.0-2.9	0.0-0.5	.32	.43			
	34-39	20-35	1.20-1.50	4.00-14.00	0.04-0.20	0.0-2.9	0.0-0.5	.20	.43			
	39-47	18-35	1.20-1.50	4.00-14.00	0.01-0.09	0.0-2.9	0.0-0.5	.10	.43			
	47-57	---	---	0.42-42.00	---	---	---	---	---			
27E:												
Newbern--------------	0-4	10-27	1.20-1.50	4.00-14.00	0.18-0.20	0.0-2.9	0.5-2.5	.43	.43	2	8	0
	4-11	10-27	1.30-1.60	4.00-14.00	0.03-0.20	0.0-2.9	0.0-0.5	.24	.49			
	11-15	---	---	0.42-42.00	0.00-0.01	---	---	---	---			
	15-25	---	---	0.42-42.00	0.00-0.01	---	---	---	---			
Westmoreland---------	0-8	10-27	1.20-1.40	4.00-14.00	0.18-0.21	0.0-2.9	0.5-2.5	.28	.37	3	5	56
	8-16	10-32	1.20-1.40	4.00-14.00	0.13-0.21	0.0-2.9	0.0-0.5	.32	.43			
	16-34	20-35	1.20-1.50	4.00-14.00	0.10-0.21	0.0-2.9	0.0-0.5	.32	.43			
	34-39	20-35	1.20-1.50	4.00-14.00	0.04-0.20	0.0-2.9	0.0-0.5	.20	.43			
	39-47	18-35	1.20-1.50	4.00-14.00	0.01-0.09	0.0-2.9	0.0-0.5	.10	.43			
	47-57	---	---	0.42-42.00	---	---	---	---	---			
28.												
Pits, quarries												

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
29C:												
Poynor----------------	0-6	10-27	1.20-1.45	14.00-42.00	0.07-0.10	0.0-2.9	0.5-2.0	.15	.43	3	8	0
	6-30	20-30	1.25-1.45	14.00-42.00	0.03-0.11	0.0-2.9	0.0-0.5	.10	.37			
	30-62	40-70	1.50-1.65	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
29D:												
Poynor----------------	0-6	10-27	1.20-1.45	14.00-42.00	0.07-0.10	0.0-2.9	0.5-2.0	.15	.43	3	8	0
	6-30	20-30	1.25-1.45	14.00-42.00	0.03-0.11	0.0-2.9	0.0-0.5	.10	.37			
	30-62	40-70	1.50-1.65	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
29E:												
Poynor----------------	0-6	10-27	1.20-1.45	14.00-42.00	0.07-0.10	0.0-2.9	0.5-2.0	.15	.43	3	8	0
	6-30	20-30	1.25-1.45	14.00-42.00	0.03-0.11	0.0-2.9	0.0-0.5	.10	.37			
	30-62	40-70	1.50-1.65	4.00-14.00	0.10-0.14	3.0-5.9	0.0-0.5	.15	.15			
30F:												
Rock outcrop.												
Newbern---------------	0-4	10-27	1.20-1.50	4.00-14.00	0.18-0.20	0.0-2.9	0.5-2.5	.43	.43	2	8	0
	4-11	10-27	1.30-1.60	4.00-14.00	0.03-0.20	0.0-2.9	0.0-0.5	.24	.49			
	11-15	---	---	0.42-42.00	0.00-0.01	---	---	---	---			
	15-25	---	---	0.42-42.00	0.00-0.01	---	---	---	---			
31B:												
Shelocta--------------	0-8	10-27	1.15-1.30	4.00-14.00	0.18-0.23	0.0-2.9	0.5-3.0	.37	.37	4	5	56
	8-34	18-34	1.30-1.55	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.43	.43			
	34-46	18-34	1.30-1.55	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.43	.43			
	46-62	15-34	1.30-1.55	4.00-42.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.43			
31C:												
Shelocta--------------	0-8	10-27	1.15-1.30	4.00-14.00	0.18-0.23	0.0-2.9	0.5-3.0	.37	.37	4	5	56
	8-34	18-34	1.30-1.55	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.43	.43			
	34-46	18-34	1.30-1.55	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.43	.43			
	46-62	15-34	1.30-1.55	4.00-42.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.43			
31D:												
Shelocta--------------	0-8	10-27	1.15-1.30	4.00-14.00	0.18-0.23	0.0-2.9	0.5-3.0	.37	.37	4	5	56
	8-34	18-34	1.30-1.55	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.43	.43			
	34-46	18-34	1.30-1.55	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.43	.43			
	46-62	15-34	1.30-1.55	4.00-42.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.43			
31E:												
Shelocta--------------	0-8	10-27	1.15-1.30	4.00-14.00	0.18-0.23	0.0-2.9	0.5-3.0	.37	.37	4	5	56
	8-34	18-34	1.30-1.55	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.43	.43			
	34-46	18-34	1.30-1.55	4.00-14.00	0.08-0.20	0.0-2.9	0.0-0.5	.43	.43			
	46-62	15-34	1.30-1.55	4.00-42.00	0.08-0.20	0.0-2.9	0.0-0.5	.28	.43			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
32B:												
Shottower	0-9	15-27	1.30-1.45	4.00-42.00	0.14-0.19	0.0-2.9	0.5-2.5	.28	.28	5	6	48
	9-21	30-50	1.45-1.60	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.24	.24			
	21-62	35-70	1.45-1.60	4.00-14.00	0.04-0.15	3.0-5.9	0.0-0.5	.15	.17			
32C:												
Shottower	0-9	15-27	1.30-1.45	4.00-42.00	0.14-0.19	0.0-2.9	0.5-2.5	.28	.28	5	6	48
	9-21	30-50	1.45-1.60	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.24	.24			
	21-62	35-70	1.45-1.60	4.00-14.00	0.04-0.15	3.0-5.9	0.0-0.5	.15	.17			
32D:												
Shottower	0-9	15-27	1.30-1.45	4.00-42.00	0.14-0.19	0.0-2.9	0.5-2.5	.28	.28	5	6	48
	9-21	30-50	1.45-1.60	4.00-14.00	0.10-0.15	3.0-5.9	0.0-0.5	.24	.24			
	21-62	35-70	1.45-1.60	4.00-14.00	0.04-0.15	3.0-5.9	0.0-0.5	.15	.17			
33A:												
Sindion	0-17	15-27	1.35-1.60	4.00-14.00	0.18-0.24	0.0-2.9	1.0-5.0	.28	.28	5	5	56
	17-42	18-35	1.45-1.70	4.00-14.00	0.11-0.22	0.0-2.9	1.0-3.0	.28	.28			
	42-62	15-35	1.50-1.70	4.00-42.00	0.02-0.22	0.0-2.9	0.2-3.0	.24	.32			
34.												
Slickens												
35A:												
Speedwell	0-17	12-20	1.20-1.40	4.00-42.00	0.12-0.18	0.0-2.9	1.0-5.0	.17	.17	5	3	86
	17-41	18-35	1.30-1.50	4.00-14.00	0.10-0.22	0.0-2.9	1.0-3.0	.32	.37			
	41-62	8-35	1.20-1.40	42.00-141.00	0.02-0.22	0.0-2.9	0.5-2.0	.20	.28			
36D:												
Sylco	0-6	15-27	1.00-1.20	4.00-14.00	0.12-0.17	0.0-2.9	0.5-2.0	.20	.43	2	8	0
	6-31	15-27	1.30-1.50	4.00-14.00	0.10-0.18	0.0-2.9	0.0-0.5	.20	.55			
	31-36	15-27	1.20-1.50	4.00-14.00	0.06-0.11	0.0-2.9	0.0-0.5	.10	.55			
	36-46	---	---	0.00-0.42	0.00-0.00	---	---	---	---			
Sylvatus	0-2	10-27	1.20-1.40	4.00-14.00	0.08-0.12	0.0-2.9	0.5-2.0	.20	.43	1	8	0
	2-12	10-27	1.20-1.60	4.00-14.00	0.03-0.12	0.0-2.9	0.0-0.5	.10	.55			
	12-22	---	---	0.00-0.42	0.00-0.00	---	---	---	---			
36E:												
Sylco	0-6	15-27	1.00-1.20	4.00-14.00	0.12-0.17	0.0-2.9	0.5-2.0	.20	.43	2	8	0
	6-31	15-27	1.30-1.50	4.00-14.00	0.10-0.18	0.0-2.9	0.0-0.5	.20	.55			
	31-36	15-27	1.20-1.50	4.00-14.00	0.06-0.11	0.0-2.9	0.0-0.5	.10	.55			
	36-46	---	---	0.00-0.42	0.00-0.00	---	---	---	---			
Sylvatus	0-2	10-27	1.20-1.40	4.00-14.00	0.08-0.12	0.0-2.9	0.5-2.0	.20	.43	1	8	0
	2-12	10-27	1.20-1.60	4.00-14.00	0.03-0.12	0.0-2.9	0.0-0.5	.10	.55			
	12-22	---	---	0.00-0.42	0.00-0.00	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
37B:												
Tate------------------	0-6	5-27	1.35-1.60	14.00-42.00	0.15-0.21	0.0-2.9	0.5-3.0	.24	.24	5	5	56
	6-44	18-35	1.30-1.45	4.00-14.00	0.08-0.19	0.0-2.9	0.0-0.5	.28	.28			
	44-62	5-20	1.35-1.60	14.00-42.00	0.04-0.18	0.0-2.9	0.0-0.5	.17	.24			
38B:												
Timberville----------	0-12	6-27	1.30-1.50	14.00-42.00	0.18-0.24	0.0-2.9	1.0-3.0	.37	.37	5	5	56
	12-25	13-35	1.30-1.50	4.00-14.00	0.05-0.22	0.0-2.9	0.5-1.0	.43	.43			
	25-62	35-60	1.40-1.55	4.00-14.00	0.04-0.15	3.0-5.9	0.0-0.5	.28	.28			
39B:												
Tumbling-------------	0-9	10-27	1.20-1.40	4.00-14.00	0.14-0.19	0.0-2.9	0.5-2.0	.32	.32	5	5	56
	9-44	35-50	1.20-1.40	4.00-14.00	0.07-0.15	0.0-2.9	0.0-0.5	.20	.24			
	44-62	35-55	1.20-1.45	4.00-14.00	0.07-0.15	0.0-2.9	0.0-0.5	.20	.24			
39C:												
Tumbling-------------	0-9	10-27	1.20-1.40	4.00-14.00	0.14-0.19	0.0-2.9	0.5-2.0	.32	.32	5	5	56
	9-44	35-50	1.20-1.40	4.00-14.00	0.07-0.15	0.0-2.9	0.0-0.5	.20	.24			
	44-62	35-55	1.20-1.45	4.00-14.00	0.07-0.15	0.0-2.9	0.0-0.5	.20	.24			
39D:												
Tumbling-------------	0-9	10-27	1.20-1.40	4.00-14.00	0.14-0.19	0.0-2.9	0.5-2.0	.32	.32	5	5	56
	9-44	35-50	1.20-1.40	4.00-14.00	0.07-0.15	0.0-2.9	0.0-0.5	.20	.24			
	44-62	35-55	1.20-1.45	4.00-14.00	0.07-0.15	0.0-2.9	0.0-0.5	.20	.24			
39E:												
Tumbling-------------	0-9	10-27	1.20-1.40	4.00-14.00	0.14-0.19	0.0-2.9	0.5-2.0	.32	.32	5	5	56
	9-44	35-50	1.20-1.40	4.00-14.00	0.07-0.15	0.0-2.9	0.0-0.5	.20	.24			
	44-62	35-55	1.20-1.45	4.00-14.00	0.07-0.15	0.0-2.9	0.0-0.5	.20	.24			
40C:												
Tumbling-------------	0-9	10-27	1.20-1.40	4.00-14.00	0.16-0.19	0.0-2.9	0.5-2.0	.32	.32	5	8	0
	9-44	35-50	1.20-1.40	4.00-14.00	0.11-0.15	0.0-2.9	0.0-0.5	.20	.24			
	44-62	35-55	1.20-1.45	4.00-14.00	0.11-0.15	0.0-2.9	0.0-0.5	.20	.24			
40D:												
Tumbling-------------	0-9	10-27	1.20-1.40	4.00-14.00	0.16-0.19	0.0-2.9	0.5-2.0	.32	.32	5	8	0
	9-44	35-50	1.20-1.40	4.00-14.00	0.11-0.15	0.0-2.9	0.0-0.5	.20	.24			
	44-62	35-55	1.20-1.45	4.00-14.00	0.11-0.15	0.0-2.9	0.0-0.5	.20	.24			
40E:												
Tumbling-------------	0-9	10-27	1.20-1.40	4.00-14.00	0.16-0.19	0.0-2.9	0.5-2.0	.32	.32	5	8	0
	9-44	35-50	1.20-1.40	4.00-14.00	0.11-0.15	0.0-2.9	0.0-0.5	.20	.24			
	44-62	35-55	1.20-1.45	4.00-14.00	0.11-0.15	0.0-2.9	0.0-0.5	.20	.24			
41.												
Udorthents-Urban land												

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
42E:												
Weikert----------------	0-2	5-27	1.20-1.40	14.00-42.00	0.09-0.11	0.0-2.9	0.5-2.0	.15	.43	2	6	48
	2-12	5-27	1.20-1.40	14.00-42.00	0.02-0.11	0.0-2.9	0.0-0.5	.10	.55			
	12-22	---	---	1.40-42.00	0.00-0.00	---	---	---	---			
Berks------------------	0-5	5-27	1.20-1.50	4.00-42.00	0.09-0.12	0.0-2.9	0.5-2.0	.15	.43	3	8	0
	5-15	5-32	1.20-1.60	4.00-42.00	0.04-0.18	0.0-2.9	0.0-0.5	.24	.49			
	15-26	5-32	1.20-1.60	4.00-42.00	0.04-0.12	0.0-2.9	0.0-0.5	.15	.49			
	26-28	5-20	1.20-1.60	14.00-42.00	0.02-0.12	0.0-2.9	0.0-0.5	.10	.55			
	28-38	---	---	1.40-42.00	0.00-0.00	---	---	---	---			
43B:												
Wheeling---------------	0-9	12-27	1.20-1.40	4.00-42.00	0.14-0.21	0.0-2.9	1.0-3.0	.24	.24	4	5	86
	9-49	18-35	1.30-1.50	4.00-14.00	0.10-0.22	0.0-2.9	0.0-0.5	.32	.32			
	49-62	10-20	1.30-1.50	4.00-14.00	0.10-0.17	0.0-2.9	0.0-0.5	.24	.24			
44B:												
Wheeling---------------	0-9	12-27	1.20-1.40	4.00-42.00	0.14-0.21	0.0-2.9	1.0-3.0	.24	.24	4	5	86
	9-49	18-35	1.30-1.50	4.00-14.00	0.10-0.22	0.0-2.9	0.0-0.5	.32	.32			
	49-62	10-20	1.30-1.50	4.00-14.00	0.10-0.17	0.0-2.9	0.0-0.5	.24	.24			
Urban land.												
45A:												
Wolfgap----------------	0-11	27-35	1.35-1.60	4.00-14.00	0.10-0.15	0.0-2.9	1.0-5.0	.20	.20	5	5	56
	11-58	18-35	1.45-1.70	4.00-14.00	0.07-0.22	0.0-2.9	0.2-3.0	.24	.24			
	58-72	8-15	1.50-1.70	42.00-141.00	0.02-0.17	0.0-2.9	0.2-1.0	.10	.28			
46C:												
Wurno------------------	0-5	10-27	1.20-1.50	4.00-14.00	0.18-0.20	0.0-2.9	0.5-2.0	.32	.43	2	6	48
	5-11	20-35	1.30-1.60	4.00-14.00	0.01-0.22	0.0-2.9	0.0-0.5	.28	.49			
	11-22	20-35	1.30-1.60	4.00-14.00	0.01-0.11	0.0-2.9	0.0-0.5	.15	.49			
	22-29	10-27	1.30-1.60	4.00-14.00	0.01-0.11	0.0-2.9	0.0-0.5	.10	.55			
	29-33	---	---	0.42-42.00	---	---	---	---	---			
	33-44	---	---	0.42-42.00	---	---	---	---	---			
Newbern----------------	0-4	10-27	1.20-1.50	4.00-14.00	0.18-0.20	0.0-2.9	0.5-2.5	.43	.43	2	8	0
	4-11	10-27	1.30-1.60	4.00-14.00	0.03-0.20	0.0-2.9	0.0-0.5	.24	.49			
	11-15	---	---	0.42-42.00	0.00-0.01	---	---	---	---			
	15-25	---	---	0.42-42.00	0.00-0.01	---	---	---	---			
46D:												
Wurno------------------	0-5	10-27	1.20-1.50	4.00-14.00	0.18-0.20	0.0-2.9	0.5-2.0	.32	.43	2	6	48
	5-11	20-35	1.30-1.60	4.00-14.00	0.01-0.22	0.0-2.9	0.0-0.5	.28	.49			
	11-22	20-35	1.30-1.60	4.00-14.00	0.01-0.11	0.0-2.9	0.0-0.5	.15	.49			
	22-29	10-27	1.30-1.60	4.00-14.00	0.01-0.11	0.0-2.9	0.0-0.5	.10	.55			
	29-33	---	---	0.42-42.00	---	---	---	---	---			
	33-44	---	---	0.42-42.00	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
46D:												
Newbern----------------	0-4	10-27	1.20-1.50	4.00-14.00	0.18-0.20	0.0-2.9	0.5-2.5	.43	.43	2	8	0
	4-11	10-27	1.30-1.60	4.00-14.00	0.03-0.20	0.0-2.9	0.0-0.5	.24	.49			
	11-15	---	---	0.42-42.00	0.00-0.01	---	---	---	---			
	15-25	---	---	0.42-42.00	0.00-0.01	---	---	---	---			
46E:												
Wurno----------------	0-5	10-27	1.20-1.50	4.00-14.00	0.18-0.20	0.0-2.9	0.5-2.0	.32	.43	2	6	48
	5-11	20-35	1.30-1.60	4.00-14.00	0.01-0.22	0.0-2.9	0.0-0.5	.28	.49			
	11-22	20-35	1.30-1.60	4.00-14.00	0.01-0.11	0.0-2.9	0.0-0.5	.15	.49			
	22-29	10-27	1.30-1.60	4.00-14.00	0.01-0.11	0.0-2.9	0.0-0.5	.10	.55			
	29-33	---	---	0.42-42.00	---	---	---	---	---			
	33-44	---	---	0.42-42.00	---	---	---	---	---			
Newbern----------------	0-4	10-27	1.20-1.50	4.00-14.00	0.18-0.20	0.0-2.9	0.5-2.5	.43	.43	2	8	0
	4-11	10-27	1.30-1.60	4.00-14.00	0.03-0.20	0.0-2.9	0.0-0.5	.24	.49			
	11-15	---	---	0.42-42.00	0.00-0.01	---	---	---	---			
	15-25	---	---	0.42-42.00	0.00-0.01	---	---	---	---			
47B:												
Wyrick----------------	0-9	15-27	1.40-1.60	4.00-42.00	0.18-0.24	3.0-5.9	0.5-3.0	.32	.32	5	5	56
	9-17	20-35	1.50-1.65	4.00-14.00	0.13-0.22	3.0-5.9	0.2-1.0	.43	.43			
	17-51	20-40	1.50-1.65	4.00-14.00	0.13-0.22	3.0-5.9	0.0-0.5	.43	.43			
	51-62	27-60	1.35-1.60	4.00-14.00	0.09-0.15	3.0-5.9	0.0-0.5	.24	.24			
Marbie----------------	0-11	15-27	1.25-1.45	4.00-14.00	0.18-0.24	0.0-2.9	0.5-3.0	.43	.43	5	5	56
	11-21	20-35	1.30-1.55	4.00-14.00	0.10-0.22	3.0-5.9	0.0-0.5	.49	.49			
	21-57	20-35	1.65-1.85	0.42-1.40	0.08-0.22	3.0-5.9	0.0-0.5	.49	.49			
	57-62	27-55	1.35-1.65	1.40-14.00	0.08-0.15	3.0-5.9	0.0-0.5	.49	.49			
47C:												
Wyrick----------------	0-9	15-27	1.40-1.60	4.00-42.00	0.18-0.24	3.0-5.9	0.5-3.0	.32	.32	5	5	56
	9-17	20-35	1.50-1.65	4.00-14.00	0.13-0.22	3.0-5.9	0.2-1.0	.43	.43			
	17-51	20-40	1.50-1.65	4.00-14.00	0.13-0.22	3.0-5.9	0.0-0.5	.43	.43			
	51-62	27-60	1.35-1.60	4.00-14.00	0.09-0.15	3.0-5.9	0.0-0.5	.24	.24			
Marbie----------------	0-11	15-27	1.25-1.45	4.00-14.00	0.18-0.24	0.0-2.9	0.5-3.0	.43	.43	5	5	56
	11-21	20-35	1.30-1.55	4.00-14.00	0.10-0.22	3.0-5.9	0.0-0.5	.49	.49			
	21-57	20-35	1.65-1.85	0.42-1.40	0.08-0.22	3.0-5.9	0.0-0.5	.49	.49			
	57-62	27-55	1.35-1.65	1.40-14.00	0.08-0.15	3.0-5.9	0.0-0.5	.49	.49			
47D:												
Wyrick----------------	0-9	15-27	1.40-1.60	4.00-42.00	0.18-0.24	3.0-5.9	0.5-3.0	.32	.32	5	5	56
	9-17	20-35	1.50-1.65	4.00-14.00	0.13-0.22	3.0-5.9	0.2-1.0	.43	.43			
	17-51	20-40	1.50-1.65	4.00-14.00	0.13-0.22	3.0-5.9	0.0-0.5	.43	.43			
	51-62	27-60	1.35-1.60	4.00-14.00	0.09-0.15	3.0-5.9	0.0-0.5	.24	.24			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								Kw	Kf	T		
	In	Pct	g/cc	um/sec	In/in	Pct	Pct					
47D:												
Marbie---------------	0-11	15-27	1.25-1.45	4.00-14.00	0.18-0.24	0.0-2.9	0.5-3.0	.43	.43	5	5	56
	11-21	20-35	1.30-1.55	4.00-14.00	0.10-0.22	3.0-5.9	0.0-0.5	.49	.49			
	21-57	20-35	1.65-1.85	0.42-1.40	0.08-0.22	3.0-5.9	0.0-0.5	.49	.49			
	57-62	27-55	1.35-1.65	1.40-14.00	0.08-0.15	3.0-5.9	0.0-0.5	.49	.49			
W.												
Water												

Table 17.—Chemical Soil Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
1B:				
Austinville----------	0-6	7.9-16	5.9-12	4.5-7.3
	6-62	8.8-22	6.6-17	4.5-7.3
1C:				
Austinville----------	0-6	7.9-16	5.9-12	4.5-7.3
	6-62	8.8-22	6.6-17	4.5-7.3
1D:				
Austinville----------	0-6	7.9-16	5.9-12	4.5-7.3
	6-62	8.8-22	6.6-17	4.5-7.3
1E:				
Austinville----------	0-6	7.9-16	5.9-12	4.5-7.3
	6-62	8.8-22	6.6-17	4.5-7.3
2E:				
Austinville----------	0-6	7.9-16	5.9-12	4.5-7.3
	6-62	8.8-22	6.6-17	4.5-7.3
Rock outcrop.				
3D:				
Berks----------------	0-5	2.4-11	1.8-8.4	3.5-6.0
	5-15	1.2-9.1	0.9-6.8	3.5-6.0
	15-26	1.2-9.1	0.9-6.8	3.5-6.0
	26-28	1.2-6.1	0.9-4.6	3.5-6.0
	28-38	---	---	---
Weikert--------------	0-2	2.0-11	2.0-8.0	4.5-6.0
	2-12	1.0-8.0	1.0-3.0	4.5-6.0
	12-22	---	---	---
4B:				
Botetourt------------	0-7	4.0-14	3.0-10	5.1-6.5
	7-18	2.9-12	2.2-9.0	5.1-6.5
	18-37	4.5-9.9	3.4-7.4	5.1-6.5
	37-48	4.5-9.9	3.4-7.4	5.1-6.5
	48-62	3.0-9.9	2.2-7.4	5.1-6.5
4C:				
Botetourt------------	0-7	4.0-14	3.0-10	5.1-6.5
	7-18	2.9-12	2.2-9.0	5.1-6.5
	18-37	4.5-9.9	3.4-7.4	5.1-6.5
	37-48	4.5-9.9	3.4-7.4	5.1-6.5
	48-62	3.0-9.9	2.2-7.4	5.1-6.5
5E:				
Brushy---------------	0-7	3.6-11	2.7-8.0	3.5-6.0
	7-13	2.5-6.1	1.9-4.6	3.5-6.0
	13-34	3.0-9.9	2.2-7.4	3.5-6.0
	34-44	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
6E:				
Calvin	0-5	3.6-11	2.7-8.4	4.5-6.0
	5-22	2.5-7.9	1.9-5.9	4.5-6.0
	22-28	2.5-7.9	1.9-5.9	4.5-6.0
	28-38	---	---	---
7C:				
Carbo	0-5	11-20	7.9-15	4.5-7.3
	5-24	21-29	16-22	5.6-7.8
	24-34	---	---	---
7D:				
Carbo	0-5	11-20	7.9-15	4.5-7.3
	5-24	21-29	16-22	5.6-7.8
	24-34	---	---	---
8D:				
Carbo	0-5	11-20	7.9-15	4.5-7.3
	5-24	21-29	16-22	5.6-7.8
	24-34	---	---	---
Rock outcrop.				
8E:				
Carbo	0-5	11-20	7.9-15	4.5-7.3
	5-24	21-29	16-22	5.6-7.8
	24-34	---	---	---
Rock outcrop.				
9E:				
Carbo	0-5	11-20	7.9-15	4.5-7.3
	5-24	21-29	16-22	5.6-7.8
	24-34	---	---	---
Rock outcrop.				
10C:				
Chiswell	0-4	3.6-11	2.7-8.4	3.5-6.0
	4-8	2.5-7.9	1.9-5.9	3.5-6.0
	8-17	2.5-9.9	1.9-7.4	3.5-6.0
	17-27	---	---	---
Litz	0-5	4.6-14	3.5-10	4.5-5.5
	5-12	3.5-13	2.6-10	4.5-5.5
	12-24	3.5-13	2.6-10	4.5-5.5
	24-36	---	---	---
	36-46	---	---	---
Groseclose	0-9	3.6-15	2.7-11	3.5-5.5
	9-54	12-22	9.2-17	3.5-5.5
	54-62	10-19	7.9-14	3.5-5.5
10D:				
Chiswell	0-4	3.6-11	2.7-8.4	3.5-6.0
	4-8	2.5-7.9	1.9-5.9	3.5-6.0
	8-17	2.5-9.9	1.9-7.4	3.5-6.0
	17-27	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
10D:				
Litz-----------------	0-5	4.6-14	3.5-10	4.5-5.5
	5-12	3.5-13	2.6-10	4.5-5.5
	12-24	3.5-13	2.6-10	4.5-5.5
	24-36	---	---	---
	36-46	---	---	---
Groseclose-----------	0-9	3.6-15	2.7-11	3.5-5.5
	9-54	12-22	9.2-17	3.5-5.5
	54-62	10-19	7.9-14	3.5-5.5
10E:				
Chiswell-------------	0-4	3.6-11	2.7-8.4	3.5-6.0
	4-8	2.5-7.9	1.9-5.9	3.5-6.0
	8-17	2.5-9.9	1.9-7.4	3.5-6.0
	17-27	---	---	---
Litz-----------------	0-5	4.6-14	3.5-10	4.5-5.5
	5-12	3.5-13	2.6-10	4.5-5.5
	12-24	3.5-13	2.6-10	4.5-5.5
	24-36	---	---	---
	36-46	---	---	---
Groseclose-----------	0-9	3.6-15	2.7-11	3.5-5.5
	9-54	12-22	9.2-17	3.5-5.5
	54-62	10-19	7.9-14	3.5-5.5
11D:				
Dekalb---------------	0-5	3.6-9.5	2.7-7.1	3.5-5.5
	5-24	1.8-5.6	1.3-4.2	3.5-5.5
	24-31	1.2-4.9	0.9-3.7	3.5-5.5
	31-41	---	---	---
11E:				
Dekalb---------------	0-5	3.6-9.5	2.7-7.1	3.5-5.5
	5-24	1.8-5.6	1.3-4.2	3.5-5.5
	24-31	1.2-4.9	0.9-3.7	3.5-5.5
	31-41	---	---	---
12B:				
Derroc---------------	0-8	3.5-10	2.6-7.9	5.6-7.3
	8-35	1.2-4.9	0.9-3.7	5.6-7.3
	35-62	1.2-3.6	0.9-2.7	5.6-7.3
13D:				
Drypond--------------	0-5	3.6-11	2.7-8.1	3.5-5.0
	5-13	3.8-8.6	2.8-6.5	3.5-5.0
	13-18	3.8-8.6	2.8-6.5	3.5-5.0
	18-28	---	---	---
Rock outcrop.				
13E:				
Drypond--------------	0-5	3.6-11	2.7-8.1	3.5-5.0
	5-13	3.8-8.6	2.8-6.5	3.5-5.0
	13-18	3.8-8.6	2.8-6.5	3.5-5.0
	18-28	---	---	---
Rock outcrop.				

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
14.				
Dumps, mines				
15B:				
Frederick------------	0-8	4.4-12	3.3-9.3	4.5-6.0
	8-18	8.8-20	6.6-15	4.5-6.0
	18-51	10-21	7.5-16	4.5-6.0
	51-72	10-21	7.5-16	4.5-6.0
15C:				
Frederick------------	0-8	4.4-12	3.3-9.3	4.5-6.0
	8-18	8.8-20	6.6-15	4.5-6.0
	18-51	10-21	7.5-16	4.5-6.0
	51-72	10-21	7.5-16	4.5-6.0
15D:				
Frederick------------	0-8	4.4-12	3.3-9.3	4.5-6.0
	8-18	8.8-20	6.6-15	4.5-6.0
	18-51	10-21	7.5-16	4.5-6.0
	51-72	10-21	7.5-16	4.5-6.0
15E:				
Frederick------------	0-8	4.4-12	3.3-9.3	4.5-6.0
	8-18	8.8-20	6.6-15	4.5-6.0
	18-51	10-21	7.5-16	4.5-6.0
	51-72	10-21	7.5-16	4.5-6.0
15F:				
Frederick------------	0-8	4.4-12	3.3-9.3	4.5-6.0
	8-18	8.8-20	6.6-15	4.5-6.0
	18-51	10-21	7.5-16	4.5-6.0
	51-72	10-21	7.5-16	4.5-6.0
16B:				
Frederick------------	0-8	4.4-12	3.3-9.3	4.5-6.0
	8-18	8.8-20	6.6-15	4.5-6.0
	18-51	10-21	7.5-16	4.5-6.0
	51-72	10-21	7.5-16	4.5-6.0
16C:				
Frederick------------	0-8	4.4-12	3.3-9.3	4.5-6.0
	8-18	8.8-20	6.6-15	4.5-6.0
	18-51	10-21	7.5-16	4.5-6.0
	51-72	10-21	7.5-16	4.5-6.0
16D:				
Frederick------------	0-8	4.4-12	3.3-9.3	4.5-6.0
	8-18	8.8-20	6.6-15	4.5-6.0
	18-51	10-21	7.5-16	4.5-6.0
	51-72	10-21	7.5-16	4.5-6.0
16E:				
Frederick------------	0-8	4.4-12	3.3-9.3	4.5-6.0
	8-18	8.8-20	6.6-15	4.5-6.0
	18-51	10-21	7.5-16	4.5-6.0
	51-72	10-21	7.5-16	4.5-6.0

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
17C:				
Frederick------------	0-8	4.4-12	3.3-9.3	4.5-6.0
	8-18	8.8-20	6.6-15	4.5-6.0
	18-51	10-21	7.5-16	4.5-6.0
	51-72	10-21	7.5-16	4.5-6.0
Urban land.				
18E:				
Greenlee-------------	0-9	2.4-14	1.8-10	3.5-6.0
	9-50	1.2-7.9	0.9-5.9	3.5-6.0
	50-65	2.0-6.1	0.9-4.6	3.5-6.0
19B:				
Ingledove------------	0-9	6.0-14	4.5-10	4.5-7.3
	9-42	4.5-9.9	3.4-7.4	4.5-7.3
	42-57	4.5-9.9	3.4-7.4	5.6-7.3
	57-62	2.5-9.9	1.9-7.4	5.6-7.3
20B:				
Ingledove------------	0-9	6.0-14	4.5-10	4.5-7.3
	9-42	4.5-9.9	3.4-7.4	4.5-7.3
	42-57	4.5-9.9	3.4-7.4	5.6-7.3
	57-62	2.5-9.9	1.9-7.4	5.6-7.3
Urban land.				
21D:				
Konnarock------------	0-2	3.7-11	2.7-8.4	4.5-6.0
	2-23	4.9-9.0	3.7-6.8	4.5-6.0
	23-27	3.8-7.9	2.8-5.9	4.5-6.0
	27-37	---	---	---
21E:				
Konnarock------------	0-2	3.7-11	2.7-8.4	4.5-6.0
	2-23	4.9-9.0	3.7-6.8	4.5-6.0
	23-27	3.8-7.9	2.8-5.9	4.5-6.0
	27-37	---	---	---
22B:				
Laidig---------------	0-6	2.9-12	2.2-8.8	3.5-5.5
	6-15	1.8-7.4	1.3-5.5	3.5-5.5
	15-31	4.5-9.9	3.4-7.4	3.5-5.5
	31-63	1.8-8.6	1.3-6.5	3.5-5.5
22C:				
Laidig---------------	0-6	2.9-12	2.2-8.8	3.5-5.5
	6-15	1.8-7.4	1.3-5.5	3.5-5.5
	15-31	4.5-9.9	3.4-7.4	3.5-5.5
	31-63	1.8-8.6	1.3-6.5	3.5-5.5
22D:				
Laidig---------------	0-6	2.9-12	2.2-8.8	3.5-5.5
	6-15	1.8-7.4	1.3-5.5	3.5-5.5
	15-31	4.5-9.9	3.4-7.4	3.5-5.5
	31-63	1.8-8.6	1.3-6.5	3.5-5.5

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
23C:				
Laidig----------------	0-6	2.9-12	2.2-8.8	3.5-5.5
	6-15	1.8-7.4	1.3-5.5	3.5-5.5
	15-31	4.5-9.9	3.4-7.4	3.5-5.5
	31-63	1.8-8.6	1.3-6.5	3.5-5.5
23D:				
Laidig----------------	0-6	2.9-12	2.2-8.8	3.5-5.5
	6-15	1.8-7.4	1.3-5.5	3.5-5.5
	15-31	4.5-9.9	3.4-7.4	3.5-5.5
	31-63	1.8-8.6	1.3-6.5	3.5-5.5
24C:				
Lily------------------	0-7	2.4-11	1.8-8.0	3.5-5.5
	7-13	1.2-7.4	0.9-5.5	3.5-5.5
	13-24	4.5-9.9	3.4-7.4	3.5-5.5
	24-30	1.2-7.4	0.9-5.5	3.5-5.5
	30-40	---	---	---
24D:				
Lily------------------	0-7	2.4-11	1.8-8.0	3.5-5.5
	7-13	1.2-7.4	0.9-5.5	3.5-5.5
	13-24	4.5-9.9	3.4-7.4	3.5-5.5
	24-30	1.2-7.4	0.9-5.5	3.5-5.5
	30-40	---	---	---
24E:				
Lily------------------	0-7	2.4-11	1.8-8.0	3.5-5.5
	7-13	1.2-7.4	0.9-5.5	3.5-5.5
	13-24	4.5-9.9	3.4-7.4	3.5-5.5
	24-30	1.2-7.4	0.9-5.5	3.5-5.5
	30-40	---	---	---
25A:				
Maurertown------------	0-6	11-18	8.1-14	5.6-7.3
	6-18	6.9-16	5.1-12	5.6-7.3
	18-41	13-23	9.6-17	5.6-7.3
	41-62	11-23	8.3-17	5.6-7.3
26A:				
Melvin----------------	0-6	5.8-18	4.3-14	5.6-7.8
	6-31	4.6-17	3.5-13	5.6-7.8
	31-62	2.9-16	2.2-12	5.6-7.8
27D:				
Newbern---------------	0-4	3.6-12	2.7-9.3	5.6-7.3
	4-11	2.5-7.9	1.9-5.9	5.6-7.3
	11-15	---	---	---
	15-25	---	---	---
Westmoreland----------	0-8	4.0-12	3.0-9.0	4.5-6.0
	8-16	3.0-9.0	2.0-7.0	4.5-6.0
	16-34	5.0-10	4.0-7.0	4.5-6.0
	34-39	5.0-10	4.0-7.0	4.5-6.0
	39-47	5.0-10	3.0-7.0	5.1-6.0
	47-57	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
27E:				
Newbern	0-4	3.6-12	2.7-9.3	5.6-7.3
	4-11	2.5-7.9	1.9-5.9	5.6-7.3
	11-15	---	---	---
	15-25	---	---	---
Westmoreland	0-8	4.0-12	3.0-9.0	4.5-6.0
	8-16	3.0-9.0	2.0-7.0	4.5-6.0
	16-34	5.0-10	4.0-7.0	4.5-6.0
	34-39	5.0-10	4.0-7.0	4.5-6.0
	39-47	5.0-10	3.0-7.0	5.1-6.0
	47-57	---	---	---
28.				
Pits, quarries				
29C:				
Poynor	0-6	4.0-11	3.0-8.0	3.5-5.5
	6-30	5.0-9.0	4.0-7.0	3.5-5.5
	30-62	10-19	8.0-14	3.5-5.5
29D:				
Poynor	0-6	4.0-11	3.0-8.0	3.5-5.5
	6-30	5.0-9.0	4.0-7.0	3.5-5.5
	30-62	10-19	8.0-14	3.5-5.5
29E:				
Poynor	0-6	4.0-11	3.0-8.0	3.5-5.5
	6-30	5.0-9.0	4.0-7.0	3.5-5.5
	30-62	10-19	8.0-14	3.5-5.5
30F:				
Rock outcrop.				
Newbern	0-4	3.6-12	2.7-9.3	5.6-7.3
	4-11	2.5-7.9	1.9-5.9	5.6-7.3
	11-15	---	---	---
	15-25	---	---	---
31B:				
Shelocta	0-8	4.0-14	3.0-10	4.5-5.5
	8-34	5.0-10	3.0-7.0	4.5-5.5
	34-46	5.0-10	3.0-7.0	4.5-5.5
	46-62	4.0-10	3.0-7.0	4.5-5.5
31C:				
Shelocta	0-8	4.0-14	3.0-10	4.5-5.5
	8-34	5.0-10	3.0-7.0	4.5-5.5
	34-46	5.0-10	3.0-7.0	4.5-5.5
	46-62	4.0-10	3.0-7.0	4.5-5.5
31D:				
Shelocta	0-8	4.0-14	3.0-10	4.5-5.5
	8-34	5.0-10	3.0-7.0	4.5-5.5
	34-46	5.0-10	3.0-7.0	4.5-5.5
	46-62	4.0-10	3.0-7.0	4.5-5.5

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
31E:				
Shelocta	0-8	4.0-14	3.0-10	4.5-5.5
	8-34	5.0-10	3.0-7.0	4.5-5.5
	34-46	5.0-10	3.0-7.0	4.5-5.5
	46-62	4.0-10	3.0-7.0	4.5-5.5
32B:				
Shottower	0-9	3.0-8.0	2.0-6.0	3.5-6.0
	9-21	3.0-6.0	2.0-5.0	3.5-6.0
	21-62	4.0-8.0	3.0-6.0	3.5-6.0
32C:				
Shottower	0-9	3.0-8.0	2.0-6.0	3.5-6.0
	9-21	3.0-6.0	2.0-5.0	3.5-6.0
	21-62	4.0-8.0	3.0-6.0	3.5-6.0
32D:				
Shottower	0-9	3.0-8.0	2.0-6.0	3.5-6.0
	9-21	3.0-6.0	2.0-5.0	3.5-6.0
	21-62	4.0-8.0	3.0-6.0	3.5-6.0
33A:				
Sindion	0-17	6.0-18	5.0-14	6.1-8.4
	17-42	7.0-16	5.0-12	6.1-8.4
	42-62	4.0-16	3.0-12	6.1-8.4
34.				
Slickens				
35A:				
Speedwell	0-17	5.0-16	4.0-12	6.1-8.4
	17-41	7.0-16	5.0-12	6.1-8.4
	41-62	3.0-13	2.0-10	6.1-8.4
36D:				
Sylco	0-6	5.0-11	4.0-8.0	3.5-5.5
	6-31	4.0-8.0	3.0-6.0	3.5-5.5
	31-36	4.0-8.0	3.0-6.0	3.5-5.5
	36-46	---	---	---
Sylvatus	0-2	4.0-11	3.0-8.0	3.5-5.0
	2-12	3.0-8.0	2.0-6.0	3.5-5.0
	12-22	---	---	---
36E:				
Sylco	0-6	5.0-11	4.0-8.0	3.5-5.5
	6-31	4.0-8.0	3.0-6.0	3.5-5.5
	31-36	4.0-8.0	3.0-6.0	3.5-5.5
	36-46	---	---	---
Sylvatus	0-2	4.0-11	3.0-8.0	3.5-5.0
	2-12	3.0-8.0	2.0-6.0	3.5-5.0
	12-22	---	---	---
37B:				
Tate	0-6	2.0-14	2.0-10	4.5-5.5
	6-44	5.0-10	3.0-7.0	4.5-5.5
	44-62	1.0-6.0	1.0-5.0	4.5-5.5

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
38B:				
Timberville----------	0-12	4.0-16	3.0-12	3.5-6.5
	12-25	6.0-15	4.0-11	3.5-6.5
	25-62	12-22	9.0-17	3.5-6.5
39B:				
Tumbling-------------	0-9	2.0-7.0	2.0-5.0	4.5-5.5
	9-44	4.0-6.0	3.0-5.0	4.5-5.5
	44-62	4.0-7.0	3.0-5.0	4.5-5.5
39C:				
Tumbling-------------	0-9	2.0-7.0	2.0-5.0	4.5-5.5
	9-44	4.0-6.0	3.0-5.0	4.5-5.5
	44-62	4.0-7.0	3.0-5.0	4.5-5.5
39D:				
Tumbling-------------	0-9	2.0-7.0	2.0-5.0	4.5-5.5
	9-44	4.0-6.0	3.0-5.0	4.5-5.5
	44-62	4.0-7.0	3.0-5.0	4.5-5.5
39E:				
Tumbling-------------	0-9	2.0-7.0	2.0-5.0	4.5-5.5
	9-44	4.0-6.0	3.0-5.0	4.5-5.5
	44-62	4.0-7.0	3.0-5.0	4.5-5.5
40C:				
Tumbling-------------	0-9	2.0-7.0	2.0-5.0	4.5-5.5
	9-44	4.0-6.0	3.0-5.0	4.5-5.5
	44-62	4.0-7.0	3.0-5.0	4.5-5.5
40D:				
Tumbling-------------	0-9	2.0-7.0	2.0-5.0	4.5-5.5
	9-44	4.0-6.0	3.0-5.0	4.5-5.5
	44-62	4.0-7.0	3.0-5.0	4.5-5.5
40E:				
Tumbling-------------	0-9	2.0-7.0	2.0-5.0	4.5-5.5
	9-44	4.0-6.0	3.0-5.0	4.5-5.5
	44-62	4.0-7.0	3.0-5.0	4.5-5.5
41.				
Udorthents-Urban land				
42E:				
Weikert--------------	0-2	2.0-11	2.0-8.0	4.5-6.0
	2-12	1.0-8.0	1.0-3.0	4.5-6.0
	12-22	---	---	---
Berks----------------	0-5	2.4-11	1.8-8.4	3.5-6.0
	5-15	1.2-9.1	0.9-6.8	3.5-6.0
	15-26	1.2-9.1	0.9-6.8	3.5-6.0
	26-28	1.2-6.1	0.9-4.6	3.5-6.0
	28-38	---	---	---
43B:				
Wheeling-------------	0-9	5.0-14	4.0-10	5.1-6.0
	9-49	5.0-10	3.0-7.0	5.1-6.0
	49-62	3.0-6.0	2.0-5.0	5.1-6.0

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
47B:				
Marbie----------------	0-11	4.9-14	3.7-10	3.5-5.5
	11-21	5.0-9.9	3.8-7.4	3.5-5.5
	21-57	5.0-9.9	3.8-7.4	3.5-5.5
	57-62	6.8-15	5.1-11	3.5-5.5
47C:				
Wyrick----------------	0-9	5.0-14	4.0-10	3.5-5.5
	9-17	6.0-11	4.0-8.0	3.5-5.5
	17-51	5.0-11	4.0-8.0	3.5-5.5
	51-62	7.0-16	5.0-12	3.5-5.5
Marbie----------------	0-11	4.9-14	3.7-10	3.5-5.5
	11-21	5.0-9.9	3.8-7.4	3.5-5.5
	21-57	5.0-9.9	3.8-7.4	3.5-5.5
	57-62	6.8-15	5.1-11	3.5-5.5
47D:				
Wyrick----------------	0-9	5.0-14	4.0-10	3.5-5.5
	9-17	6.0-11	4.0-8.0	3.5-5.5
	17-51	5.0-11	4.0-8.0	3.5-5.5
	51-62	7.0-16	5.0-12	3.5-5.5
Marbie----------------	0-11	4.9-14	3.7-10	3.5-5.5
	11-21	5.0-9.9	3.8-7.4	3.5-5.5
	21-57	5.0-9.9	3.8-7.4	3.5-5.5
	57-62	6.8-15	5.1-11	3.5-5.5
W.				
Water				

Table 18.—Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
1B:										
Austinville------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
1C:										
Austinville------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
1D:										
Austinville------------	B	High	Jan-Dec	---	---	---	---	None	---	None
1E:										
Austinville------------	B	High	Jan-Dec	---	---	---	---	None	---	None
2E:										
Austinville------------	B	High	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
3D:										
Berks------------------	C	High	Jan-Dec	---	---	---	---	None	---	None
Weikert----------------	D	High	Jan-Dec	---	---	---	---	None	---	None
4B:										
Botetourt--------------	C	Very high	Jan-May	1.5-2.5	>6.0	---	---	None	Very brief	Rare
			June	2.5-6.6	>6.0	---	---	None	Very brief	Rare
			Jul-Sep	---	---	---	---	None	Very brief	Rare
			October	2.5-6.6	>6.0	---	---	None	Very brief	Rare
			Nov-Dec	1.5-2.5	>6.0	---	---	None	Very brief	Rare
4C:										
Botetourt--------------	C	Very high	Jan-May	1.5-2.5	>6.0	---	---	None	---	None
			June	2.5-6.6	>6.0	---	---	None	---	None
			Jul-Sep	---	---	---	---	None	---	None
			October	2.5-6.6	>6.0	---	---	None	---	None
			Nov-Dec	1.5-2.5	>6.0	---	---	None	---	None
5E:										
Brushy-----------------	B	Very high	Jan-Dec	---	---	---	---	None	---	None
6E:										
Calvin-----------------	C	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
7C:										
Carbo	C	High	Jan-Dec	---	---	---	---	None	---	None
7D:										
Carbo	C	Very high	Jan-Dec	---	---	---	---	None	---	None
8D:										
Carbo	C	High	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
8E:										
Carbo	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
9E:										
Carbo	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
10C:										
Chiswell	D	Medium	Jan-Dec	---	---	---	---	None	---	None
Litz	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Groseclose	C	High	Jan-Dec	---	---	---	---	None	---	None
10D:										
Chiswell	D	High	Jan-Dec	---	---	---	---	None	---	None
Litz	C	High	Jan-Dec	---	---	---	---	None	---	None
Groseclose	C	Very high	Jan-Dec	---	---	---	---	None	---	None
10E:										
Chiswell	D	High	Jan-Dec	---	---	---	---	None	---	None
Litz	C	High	Jan-Dec	---	---	---	---	None	---	None
Groseclose	C	Very high	Jan-Dec	---	---	---	---	None	---	None
11D:										
Dekalb	C	Very high	Jan-Dec	---	---	---	---	None	---	None
11E:										
Dekalb	C	Very high	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
12B:										
Derroc------------------	B	Very low	Jan-May	---	---	---	---	None	Very brief	Occasional
			Jun-Oct	---	---	---	---	None	Very brief	Rare
			Nov-Dec	---	---	---	---	None	Very brief	Occasional
13D:										
Drypond----------------	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
13E:										
Drypond----------------	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop.										
14.										
Dumps, mines										
15B:										
Frederick--------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
15C:										
Frederick--------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
15D:										
Frederick--------------	B	High	Jan-Dec	---	---	---	---	None	---	None
15E:										
Frederick--------------	B	High	Jan-Dec	---	---	---	---	None	---	None
15F:										
Frederick--------------	B	High	Jan-Dec	---	---	---	---	None	---	None
16B:										
Frederick--------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
16C:										
Frederick--------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
16D:										
Frederick--------------	B	High	Jan-Dec	---	---	---	---	None	---	None
16E:										
Frederick--------------	B	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
17C:										
Frederick-------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land.										
18E:										
Greenlee--------------	B	Medium	Jan-Dec	---	---	---	---	None	---	None
19B:										
Ingledove-------------	B	Medium	Jan-Dec	---	---	---	---	None	Very brief	Rare
20B:										
Ingledove-------------	B	Medium	Jan-Dec	---	---	---	---	None	Very brief	Rare
Urban land.										
21D:										
Konnarock-------------	C	Very high	Jan-Dec	---	---	---	---	None	---	None
21E:										
Konnarock-------------	C	Very high	Jan-Dec	---	---	---	---	None	---	None
22B:										
Laidig----------------	C	Medium	Jan-May	2.5-4.0	4.0-6.6	---	---	None	---	None
			Jun-Oct	---	---	---	---	None	---	None
			Nov-Dec	2.5-4.0	4.0-6.6	---	---	None	---	None
22C:										
Laidig----------------	C	Medium	Jan-May	2.5-4.0	4.0-6.6	---	---	None	---	None
			Jun-Oct	---	---	---	---	None	---	None
			Nov-Dec	2.5-4.0	4.0-6.6	---	---	None	---	None
22D:										
Laidig----------------	C	High	Jan-May	2.5-4.0	4.0-6.6	---	---	None	---	None
			Jun-Oct	---	---	---	---	None	---	None
			Nov-Dec	2.5-4.0	4.0-6.6	---	---	None	---	None
23C:										
Laidig----------------	C	Medium	Jan-May	2.5-4.0	4.0-6.6	---	---	None	---	None
			Jun-Oct	---	---	---	---	None	---	None
			Nov-Dec	2.5-4.0	4.0-6.6	---	---	None	---	None
23D:										
Laidig----------------	C	High	Jan-May	2.5-4.0	4.0-6.6	---	---	None	---	None
			Jun-Oct	---	---	---	---	None	---	None
			Nov-Dec	2.5-4.0	4.0-6.6	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
24C:										
Lily	B	High	Jan-Dec	---	---	---	---	None	---	None
24D:										
Lily	B	Very high	Jan-Dec	---	---	---	---	None	---	None
24E:										
Lily	B	Very high	Jan-Dec	---	---	---	---	None	---	None
25A:										
Maurertown	D	Negligible	Jan-May	0.0-0.5	>6.0	0.0-0.5	Brief	Frequent	Very brief	Occasional
			June	0.0-0.5	>6.0	0.0-0.5	Brief	Frequent	Very brief	Rare
			Jul-Sep	0.5-6.6	>6.0	0.0-0.5	Brief	Occasional	Very brief	Rare
			October	0.5-6.6	>6.0	0.0-0.5	Brief	Frequent	Very brief	Rare
			Nov-Dec	0.0-0.5	>6.0	0.0-0.5	Brief	Frequent	Very brief	Occasional
26A:										
Melvin	D	Negligible	Jan-May	0.0-1.0	>6.0	0.0-0.5	Brief	Frequent	Very brief	Frequent
			Jun-Oct	0.0-1.0	>6.0	0.0-0.5	Brief	Frequent	Very brief	Occasional
			Nov-Dec	0.0-1.0	>6.0	0.0-0.5	Brief	Frequent	Very brief	Frequent
27D:										
Newbern	C	High	Jan-Dec	---	---	---	---	None	---	None
Westmoreland	B	High	Jan-Dec	---	---	---	---	None	---	None
27E:										
Newbern	C	High	Jan-Dec	---	---	---	---	None	---	None
Westmoreland	B	High	Jan-Dec	---	---	---	---	None	---	None
28.										
Pits, quarries										
29C:										
Poynor	B	Medium	Jan-Dec	---	---	---	---	None	---	None
29D:										
Poynor	B	High	Jan-Dec	---	---	---	---	None	---	None
29E:										
Poynor	B	High	Jan-Dec	---	---	---	---	None	---	None
30F:										
Rock outcrop.										
Newbern	C	High	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
31B:										
Shelocta	B	Medium	Jan-Dec	---	---	---	---	None	---	None
31C:										
Shelocta	B	Medium	Jan-Dec	---	---	---	---	None	---	None
31D:										
Shelocta	B	High	Jan-Dec	---	---	---	---	None	---	None
31E:										
Shelocta	B	High	Jan-Dec	---	---	---	---	None	---	None
32B:										
Shottower	B	Medium	Jan-Dec	---	---	---	---	None	---	None
32C:										
Shottower	B	Medium	Jan-Dec	---	---	---	---	None	---	None
32D:										
Shottower	B	High	Jan-Dec	---	---	---	---	None	---	None
33A:										
Sindion	B	Very high	Jan-May	1.5-3.0	>6.0	---	---	None	Very brief	Occasional
			June	3.0-6.6	>6.0	---	---	None	Very brief	Rare
			Jul-Sep	---	---	---	---	None	Very brief	Rare
			October	3.0-6.6	>6.0	---	---	None	Very brief	Rare
			Nov-Dec	1.5-3.0	>6.0	---	---	None	Very brief	Occasional
34.										
Slickens										
35A:										
Speedwell	B	Low	Jan-May	---	---	---	---	None	Very brief	Occasional
			Jun-Oct	---	---	---	---	None	Very brief	Rare
			Nov-Dec	---	---	---	---	None	Very brief	Occasional
36D:										
Sylco	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Sylvatus	D	Very high	Jan-Dec	---	---	---	---	None	---	None
36E:										
Sylco	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Sylvatus	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
37B:										
Tate	B	Medium	Jan-Dec	---	---	---	---	None	---	None
38B:										
Timberville	B	Low	Jan-Dec	---	---	---	---	None	Very brief	Rare
39B:										
Tumbling	B	Medium	Jan-Dec	---	---	---	---	None	---	None
39C:										
Tumbling	B	Medium	Jan-Dec	---	---	---	---	None	---	None
39D:										
Tumbling	B	High	Jan-Dec	---	---	---	---	None	---	None
39E:										
Tumbling	B	High	Jan-Dec	---	---	---	---	None	---	None
40C:										
Tumbling	B	Medium	Jan-Dec	---	---	---	---	None	---	None
40D:										
Tumbling	B	High	Jan-Dec	---	---	---	---	None	---	None
40E:										
Tumbling	B	High	Jan-Dec	---	---	---	---	None	---	None
41:										
Udorthents	---	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land.										
42E:										
Weikert	D	High	Jan-Dec	---	---	---	---	None	---	None
Berks	C	High	Jan-Dec	---	---	---	---	None	---	None
43B:										
Wheeling	B	Medium	Jan-Dec	---	---	---	---	None	Very brief	Rare
44B:										
Wheeling	B	Medium	Jan-Dec	---	---	---	---	None	Very brief	Rare
Urban land.										

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
45A:										
Wolfgap	B	Low	Jan-May	---	---	---	---	None	Very brief	Occasional
			Jun-Oct	---	---	---	---	None	Very brief	Rare
			Nov-Dec	---	---	---	---	None	Very brief	Occasional
46C:										
Wurno	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Newbern	C	Medium	Jan-Dec	---	---	---	---	None	---	None
46D:										
Wurno	C	High	Jan-Dec	---	---	---	---	None	---	None
Newbern	C	High	Jan-Dec	---	---	---	---	None	---	None
46E:										
Wurno	C	High	Jan-Dec	---	---	---	---	None	---	None
Newbern	C	High	Jan-Dec	---	---	---	---	None	---	None
47B:										
Wyrick	B	Medium	Jan-Dec	---	---	---	---	None	---	None
Marbie	C	High	Jan-Apr	2.0-4.0	4.0-5.0	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
			Nov-Dec	2.0-4.0	4.0-5.0	---	---	None	---	None
47C:										
Wyrick	B	Medium	Jan-Dec	---	---	---	---	None	---	None
Marbie	C	High	Jan-Apr	2.0-4.0	4.0-5.0	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
			Nov-Dec	2.0-4.0	4.0-5.0	---	---	None	---	None
47D:										
Wyrick	B	High	Jan-Dec	---	---	---	---	None	---	None
Marbie	C	Very high	Jan-Apr	2.0-4.0	4.0-5.0	---	---	None	---	None
			May-Oct	---	---	---	---	None	---	None
			Nov-Dec	2.0-4.0	4.0-5.0	---	---	None	---	None
W.										
Water										

Table 19.—Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
1B:						
Austinville	---	---	---	Moderate	High	High
1C:						
Austinville	---	---	---	Moderate	High	High
1D:						
Austinville	---	---	---	Moderate	High	High
1E:						
Austinville	---	---	---	Moderate	High	High
2E:						
Austinville	---	---	---	Moderate	High	High
Rock outcrop	Bedrock (lithic)	0-0	Indurated	---	---	---
3D:						
Berks	Bedrock (lithic)	20-40	Strongly cemented	Moderate	Low	High
Weikert	Bedrock (lithic)	10-20	Strongly cemented	Moderate	Moderate	Moderate
4B:						
Botetourt	---	---	---	High	Moderate	High
4C:						
Botetourt	---	---	---	High	Moderate	High
5E:						
Brushy	Bedrock (lithic)	20-40	Indurated	Moderate	Low	High
6E:						
Calvin	Bedrock (lithic)	20-40	Very strongly cemented	Moderate	Low	Moderate
7C:						
Carbo	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
7D:						
Carbo	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
8D:						
Carbo	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Rock outcrop	Bedrock (lithic)	0-0	Indurated	---	---	---
8E:						
Carbo	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Rock outcrop	Bedrock (lithic)	0-0	Indurated	---	---	---
9E:						
Carbo	Bedrock (lithic)	20-40	Indurated	Moderate	High	Low
Rock outcrop	Bedrock (lithic)	0-0	Indurated	---	---	---

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
10C:						
Chiswell	Bedrock (paralithic)	10-20	Moderately cemented	Moderate	Moderate	Moderate
Litz	Bedrock (paralithic)	20-40	Moderately cemented	Moderate	Moderate	High
	Bedrock (lithic)	20-40	Indurated			
Groseclose	---	---	---	Moderate	High	High
10D:						
Chiswell	Bedrock (paralithic)	10-20	Moderately cemented	Moderate	Moderate	Moderate
Litz	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High
	Bedrock (paralithic)	20-40	Moderately cemented			
Groseclose	---	---	---	Moderate	High	High
10E:						
Chiswell	Bedrock (paralithic)	10-20	Moderately cemented	Moderate	Moderate	Moderate
Litz	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High
	Bedrock (paralithic)	20-40	Moderately cemented			
Groseclose	---	---	---	Moderate	High	High
11D:						
Dekalb	Bedrock (lithic)	20-40	Indurated	Low	Low	High
11E:						
Dekalb	Bedrock (lithic)	20-40	Indurated	Low	Low	High
12B:						
Derroc	---	---	---	Moderate	Low	Moderate
13D:						
Drypond	Bedrock (lithic)	10-20	Indurated	Low	Low	High
Rock outcrop	Bedrock (lithic)	0-0	Indurated	---	---	---
13E:						
Drypond	Bedrock (lithic)	10-20	Indurated	Low	Low	High
Rock outcrop	Bedrock (lithic)	0-0	Indurated	---	---	---
14. Dumps, mines						
15B:						
Frederick	---	---	---	Moderate	Moderate	High
15C:						
Frederick	---	---	---	Moderate	Moderate	High
15D:						
Frederick	---	---	---	Moderate	Moderate	High

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
15E:						
Frederick-----------	---	---	---	Moderate	Moderate	High
15F:						
Frederick-----------	---	---	---	Moderate	Moderate	High
16B:						
Frederick-----------	---	---	---	Moderate	Moderate	High
16C:						
Frederick-----------	---	---	---	Moderate	Moderate	High
16D:						
Frederick-----------	---	---	---	Moderate	Moderate	High
16E:						
Frederick-----------	---	---	---	Moderate	Moderate	High
17C:						
Frederick-----------	---	---	---	Moderate	Moderate	High
Urban land.						
18E:						
Greenlee------------	---	---	---	Moderate	Low	High
19B:						
Ingledove-----------	---	---	---	---	Low	High
20B:						
Ingledove-----------	---	---	---	---	Low	High
Urban land.						
21D:						
Konnarock-----------	Bedrock (lithic)	20-40	Indurated	Moderate	Low	Moderate
21E:						
Konnarock-----------	Bedrock (lithic)	20-40	Indurated	Moderate	Low	Moderate
22B:						
Laidig--------------	Fragipan	30-50	Weakly cemented	Moderate	Moderate	High
22C:						
Laidig--------------	Fragipan	30-50	Weakly cemented	Moderate	Moderate	High
22D:						
Laidig--------------	Fragipan	30-50	Weakly cemented	Moderate	Moderate	High
23C:						
Laidig--------------	Fragipan	30-50	Weakly cemented	Moderate	Moderate	High
23D:						
Laidig--------------	Fragipan	30-50	Weakly cemented	Moderate	Moderate	High
24C:						
Lily----------------	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High
24D:						
Lily----------------	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
24E:						
Lily----------------	Bedrock (lithic)	20-40	Indurated	Moderate	Moderate	High
25A:						
Maurertown----------	---	---	---	High	High	High
26A:						
Melvin--------------	---	---	---	High	High	Low
27D:						
Newbern-------------	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Low	Low
Westmoreland--------	Bedrock (lithic)	40-60	Very strongly cemented	Moderate	Low	High
27E:						
Newbern-------------	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Low	Low
Westmoreland--------	Bedrock (lithic)	40-60	Very strongly cemented	Moderate	Low	High
28.						
Pits, quarries						
29C:						
Poynor--------------	---	---	---	Moderate	Moderate	High
29D:						
Poynor--------------	---	---	---	Moderate	Moderate	High
29E:						
Poynor--------------	---	---	---	Moderate	Moderate	High
30F:						
Rock outcrop--------	Bedrock (lithic)	0-0	Indurated	---	---	---
Newbern-------------	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Low	Low
31B:						
Shelocta------------	Bedrock (lithic)	48-80	Strongly cemented	---	Low	High
31C:						
Shelocta------------	Bedrock (lithic)	48-80	Strongly cemented	---	Low	High
31D:						
Shelocta------------	Bedrock (lithic)	48-80	Strongly cemented	---	Low	High
31E:						
Shelocta------------	Bedrock (lithic)	48-80	Strongly cemented	---	Low	High
32B:						
Shottower-----------	---	---	---	Moderate	High	Moderate
32C:						
Shottower-----------	---	---	---	Moderate	High	Moderate

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
32D:						
Shottower	---	---	---	Moderate	High	Moderate
33A:						
Sindion	---	---	---	High	Low	Moderate
34.						
Slickens						
35A:						
Speedwell	---	---	---	Moderate	Low	Moderate
36D:						
Sylco	Bedrock (lithic)	20-40	Indurated	Moderate	Low	Moderate
Sylvatus	Bedrock (lithic)	10-20	Indurated	Moderate	Moderate	Moderate
36E:						
Sylco	Bedrock (lithic)	20-40	Indurated	Moderate	Low	Moderate
Sylvatus	Bedrock (lithic)	10-20	Indurated	Moderate	Moderate	Moderate
37B:						
Tate	---	---	---	Moderate	Moderate	Moderate
38B:						
Timberville	---	---	---	Moderate	Low	High
39B:						
Tumbling	---	---	---	Moderate	Moderate	Moderate
39C:						
Tumbling	---	---	---	Moderate	Moderate	Moderate
39D:						
Tumbling	---	---	---	Moderate	Moderate	Moderate
39E:						
Tumbling	---	---	---	Moderate	Moderate	Moderate
40C:						
Tumbling	---	---	---	Moderate	Moderate	Moderate
40D:						
Tumbling	---	---	---	Moderate	Moderate	Moderate
40E:						
Tumbling	---	---	---	Moderate	Moderate	Moderate
41:						
Udorthents	Bedrock (lithic)	10-72	---	---	---	---
Urban land.						
42E:						
Weikert	Bedrock (lithic)	10-20	Strongly cemented	Moderate	Moderate	Moderate
Berks	Bedrock (lithic)	20-40	Strongly cemented	Moderate	Low	High

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer			Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness		Uncoated steel	Concrete
		In				
43B:						
Wheeling	---	---	---	Moderate	Low	Moderate
44B:						
Wheeling	---	---	---	Moderate	Low	Moderate
Urban land.						
45A:						
Wolfgap	---	---	---	Moderate	Low	Moderate
46C:						
Wurno	Bedrock (paralithic)	20-40	Weakly cemented	Moderate	Low	Low
	Bedrock (lithic)	20-40	Very strongly cemented			
Newbern	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Low	Low
46D:						
Wurno	Bedrock (paralithic)	20-40	Weakly cemented	Moderate	Low	Low
	Bedrock (lithic)	20-40	Very strongly cemented			
Newbern	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Low	Low
46E:						
Wurno	Bedrock (paralithic)	20-40	Weakly cemented	Moderate	Low	Low
	Bedrock (lithic)	20-40	Very strongly cemented			
Newbern	Bedrock (lithic)	10-20	Very strongly cemented	Moderate	Low	Low
47B:						
Wyrick	---	---	---	Moderate	Moderate	Moderate
Marbie	Fragipan	18-36	Weakly cemented	High	Moderate	Moderate
47C:						
Wyrick	---	---	---	Moderate	Moderate	Moderate
Marbie	Fragipan	18-36	Weakly cemented	High	Moderate	Moderate
47D:						
Wyrick	---	---	---	Moderate	Moderate	Moderate
Marbie	Fragipan	18-36	Weakly cemented	High	Moderate	Moderate
W.						
Water						

Table 20.—Classification of the Soils

Soil name	Family or higher taxonomic class
Austinville	Fine, mixed, subactive, mesic Rhodic Paleudults
Berks	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Botetourt	Fine-loamy, siliceous, semiactive, mesic Ultic Hapludalfs
Brushy	Loamy-skeletal, siliceous, semiactive, mesic Typic Hapludults
Calvin	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Carbo	Very fine, mixed, active, mesic Typic Hapludalfs
Chiswell	Loamy-skeletal, mixed, active, mesic, shallow Typic Dystrudepts
Dekalb	Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts
Derroc	Loamy-skeletal, siliceous, active, mesic Dystric Fluventic Eutrudepts
Drypond	Loamy-skeletal, siliceous, active, mesic Lithic Dystrudepts
Frederick	Fine, mixed, semiactive, mesic Typic Paleudults
Greenlee	Loamy-skeletal, mixed, semiactive, mesic Typic Dystrudepts
Groseclose	Fine, mixed, semiactive, mesic Typic Hapludults
Ingledove	Fine-loamy, siliceous, semiactive, mesic Ultic Hapludalfs
Konnarock	Loamy-skeletal, mixed, semiactive, mesic Typic Dystrudepts
Laidig	Fine-loamy, siliceous, active, mesic Typic Fragiudults
Lily	Fine-loamy, siliceous, semiactive, mesic Typic Hapludults
Litz	Loamy-skeletal, mixed, active, mesic Ruptic-Ultic Dystrudepts
Marbie	Fine-loamy, siliceous, semiactive, mesic Typic Fragiudults
Maurertown	Fine, mixed, semiactive, mesic Typic Endoaqualfs
Melvin	Fine-silty, mixed, active, nonacid, mesic Fluvaquentic Endoaquepts
Newbern	Loamy, mixed, active, mesic Lithic Eutrudepts
Poynor	Loamy-skeletal over clayey, siliceous, semiactive, mesic Typic Paleudults
Shelocta	Fine-loamy, mixed, active, mesic Typic Hapludults
Shottower	Fine, kaolinitic, mesic Typic Paleudults
Sindion	Fine-loamy, mixed, active, mesic Fluvaquentic Hapludolls
Speedwell	Fine-loamy, mixed, active, mesic Fluventic Hapludolls
Sylco	Loamy-skeletal, mixed, active, mesic Typic Dystrudepts
Sylvatus	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
Tate	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
Timberville	Fine, mixed, active, mesic Typic Hapludults
Tumbling	Fine, kaolinitic, mesic Typic Paleudults
Udorthents	Udorthents
Weikert	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts
Westmoreland	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
Wheeling	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
Wolfgap	Fine-loamy, siliceous, active, mesic Fluventic Hapludolls
Wurno	Loamy-skeletal, mixed, semiactive, mesic Dystric Eutrudepts
Wyrick	Fine-loamy, siliceous, semiactive, mesic Typic Paleudults

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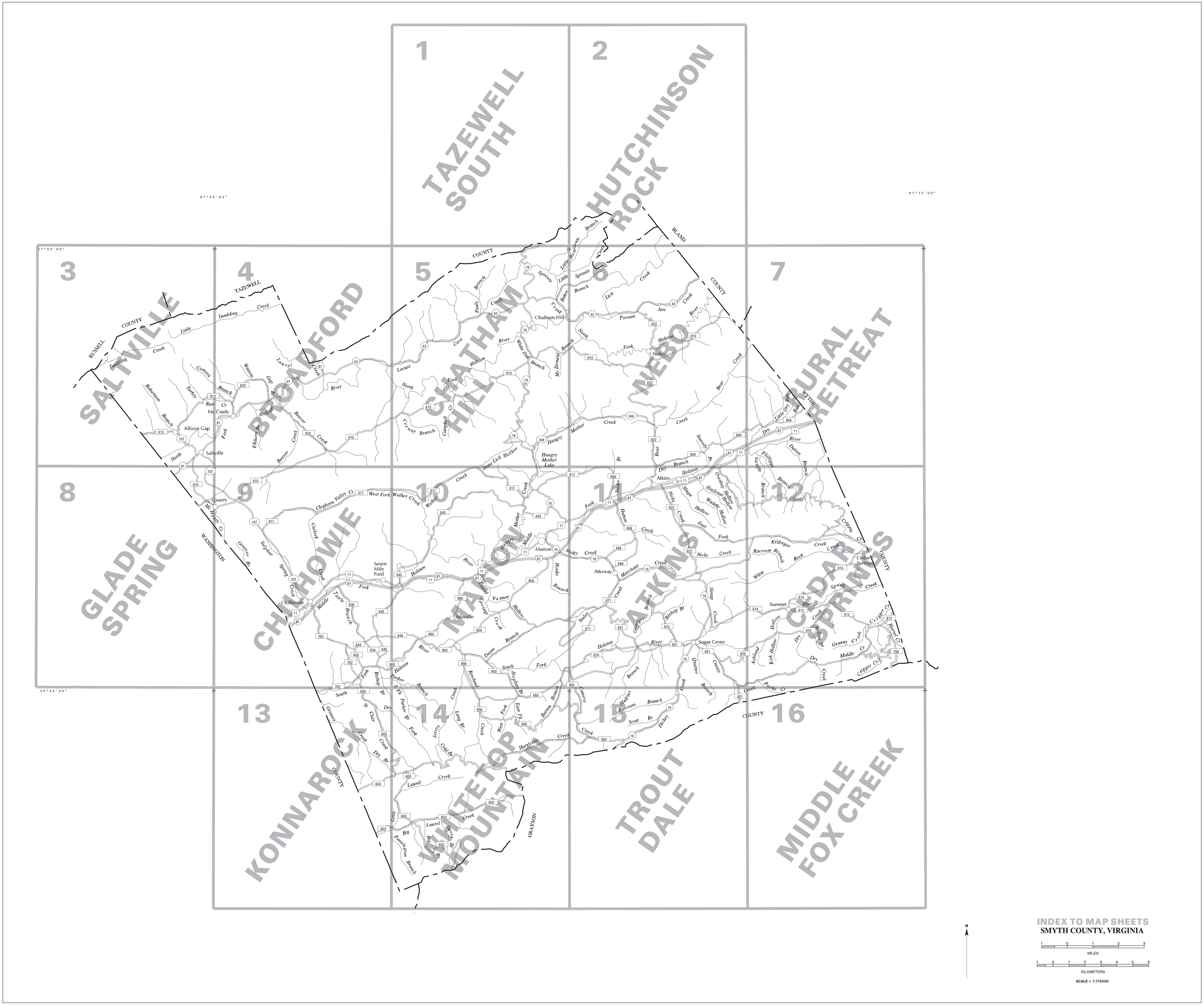
1 TAZEWELL SOUTH
2 HUTCHINSON ROCK
3 SALTVILLE
4 BROADFORD
5 CHATHAM HILL
6 NEBO
7 RURAL RETREAT
8 GLADE SPRING
9 CHILHOWIE
10 MARION
11 ATKINS
12 CEDAR SPRINGS
13 KONNAROCK
14 WHITETOP MOUNTAIN
15 TROUT DALE
16 MIDDLE FOX CREEK
INDEX TO MAP SHEETS
SMYTH COUNTY, VIRGINIA
MILES
KILOMETERS
SCALE = 1:115000

SOIL LEGEND

Map symbols consist of numbers or a combination of numbers and letters. The initial number represents the kind of soil. A capital letter following the initial number indicates the class of slope. Symbols without a slope letter are used for miscellaneous areas.

SYMBOL	NAME
1B	Austinville silty clay loam, 2 to 7 percent slopes
1C	Austinville silty clay loam, 7 to 15 percent slopes
1D	Austinville silty clay loam, 15 to 25 percent slopes
1E	Austinville silty clay loam, 25 to 35 percent slopes
2E	Austinville-Rock outcrop complex, 10 to 45 percent slopes
3D	Berks-Weikert complex, 15 to 35 percent slopes
4B	Botetourt loam, 2 to 7 percent slopes, rarely flooded
4C	Botetourt loam, 7 to 15 percent slopes
5E	Brushy extremely gravelly loam, 25 to 65 percent slopes
6E	Calvin channery silt loam, 25 to 65 percent slopes
7C	Carbo silty clay loam, 7 to 15 percent slopes
7D	Carbo silty clay loam, 15 to 25 percent slopes
8D	Carbo-Rock outcrop complex, 7 to 25 percent slopes
8E	Carbo-Rock outcrop complex, 25 to 65 percent slopes
9E	Carbo-Rock outcrop complex, 7 to 65 percent slopes, karst
10C	Chiswell-Litz-Groseclose complex, 7 to 15 percent slopes
10D	Chiswell-Litz-Groseclose complex, 15 to 25 percent slopes
10E	Chiswell-Litz-Groseclose complex, 25 to 65 percent slopes
11D	Dekalb channery sandy loam, 15 to 25 percent slopes, extremely stony
11E	Dekalb channery sandy loam, 25 to 80 percent slopes, extremely stony
12B	Derroc cobbly sandy loam, 0 to 5 percent slopes, occasionally flooded
13D	Drypond-Rock outcrop complex, 15 to 35 percent slopes, extremely stony
13E	Drypond-Rock outcrop complex, 35 to 80 percent slopes, extremely stony
14	Dumps, mines
15B	Frederick silt loam, 2 to 7 percent slopes
15C	Frederick silt loam, 7 to 15 percent slopes
15D	Frederick silt loam, 15 to 25 percent slopes
15E	Frederick silt loam, 25 to 35 percent slopes
15F	Frederick silt loam, 35 to 60 percent slopes
16B	Frederick gravelly silt loam, 2 to 7 percent slopes
16C	Frederick gravelly silt loam, 7 to 15 percent slopes
16D	Frederick gravelly silt loam, 15 to 25 percent slopes
16E	Frederick gravelly silt loam, 25 to 35 percent slopes
17C	Frederick-Urban land complex, 0 to 15 percent slopes
18E	Greenlee very cobbly loam, 25 to 65 percent slopes, very stony
19B	Ingledove loam, 2 to 7 percent slopes, rarely flooded
20B	Ingledove-Urban land complex, 2 to 7 percent slopes, rarely flooded
21D	Konnarock very channery silt loam, 15 to 35 percent slopes
21E	Konnarock very channery silt loam, 35 to 65 percent slopes
22B	Laidig sandy loam, 2 to 7 percent slopes
22C	Laidig sandy loam, 7 to 15 percent slopes
22D	Laidig sandy loam, 15 to 25 percent slopes
23C	Laidig sandy loam, 7 to 15 percent slopes, very stony
23D	Laidig sandy loam, 15 to 25 percent slopes, very stony
24C	Lily sandy loam, 7 to 15 percent slopes, very stony

SYMBOL	NAME
24D	Lily sandy loam, 15 to 25 percent slopes, very stony
24E	Lily sandy loam, 25 to 65 percent slopes, very stony
25A	Maurertown silt loam, 0 to 2 percent slopes, occasionally flooded
26A	Melvin silt loam, 0 to 2 percent slopes, frequently flooded
27D	Newbern-Westmoreland complex, 15 to 25 percent slopes
27E	Newbern-Westmoreland complex, 25 to 65 percent slopes
28	Pits, quarries
29C	Poynor very gravelly silt loam, 7 to 15 percent slopes
29D	Poynor very gravelly silt loam, 15 to 25 percent slopes
29E	Poynor very gravelly silt loam, 25 to 60 percent slopes
30F	Rock outcrop-Newbern complex, 25 to 99 percent slopes
31B	Shelocta silt loam, 2 to 7 percent slopes
31C	Shelocta silt loam, 7 to 15 percent slopes
31D	Shelocta silt loam, 15 to 25 percent slopes
31E	Shelocta silt loam, 25 to 45 percent slopes
32B	Shottower loam, 2 to 7 percent slopes
32C	Shottower loam, 7 to 15 percent slopes
32D	Shottower loam, 15 to 30 percent slopes
33A	Sindion silt loam, 0 to 2 percent slopes, occasionally flooded
34	Slickens
35A	Speedwell fine sandy loam, 0 to 2 percent slopes, occasionally flooded
36D	Sylco-Sylvatus complex, 15 to 35 percent slopes
36E	Sylco-Sylvatus complex, 35 to 70 percent slopes
37B	Tate loam, 2 to 7 percent slopes
38B	Timberville silt loam, 0 to 7 percent slopes, rarely flooded
39B	Tumbling loam, 2 to 7 percent slopes
39C	Tumbling loam, 7 to 15 percent slopes
39D	Tumbling loam, 15 to 25 percent slopes
39E	Tumbling loam, 25 to 35 percent slopes
40C	Tumbling loam, 7 to 15 percent slopes, very stony
40D	Tumbling loam, 15 to 25 percent slopes, very stony
40E	Tumbling loam, 25 to 65 percent slopes, very stony
41	Udorthents-Urban land complex, 0 to 25 percent slopes
42E	Weikert-Berks complex, 35 to 70 percent slopes
43B	Wheeling loam, 2 to 7 percent slopes, rarely flooded
44B	Wheeling-Urban land complex, 2 to 7 percent slopes, rarely flooded
45A	Wolfgap clay loam, 0 to 2 percent slopes, occasionally flooded
46C	Wurno-Newbern complex, 7 to 15 percent slopes
46D	Wurno-Newbern complex, 15 to 25 percent slopes
46E	Wurno-Newbern complex, 25 to 65 percent slopes
47B	Wyrick-Marbie complex, 2 to 7 percent slopes
47C	Wyrick-Marbie complex, 7 to 15 percent slopes
47D	Wyrick-Marbie complex, 15 to 25 percent slopes
W	Water

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

County or parish

Limit of soil survey (label)

Field sheet matchline & neatline

Quadrangle matchline (shown in white)

TRANSPORTATION

Other roads

ROAD EMBLEM & DESIGNATIONS

Interstate 173

Federal 287

State 52

HYDROGRAPHIC FEATURES

STREAMS

Perennial, double line

Unclassified stream

Drainage end
(Indicates direction of flow)

SPECIAL SYMBOLS FOR SOIL SURVEY AND SSURGO

SOIL DELINEATIONS AND SYMBOLS 1A 32A

LANDFORM FEATURES AND

MISCELLANEOUS SURFACE FEATURES

Gravelly spot

Mine or quarry

Rock outcrop

Severely eroded spot

Sinkhole

Stony spot

Very stony spot

Wet spot

AD HOC FEATURES

Boudery spot

Rubbly land

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
TAZEWELL SOUTH QUADRANGLE
SHEET NUMBER 1 OF 16

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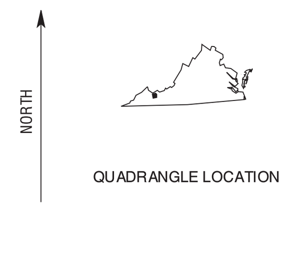
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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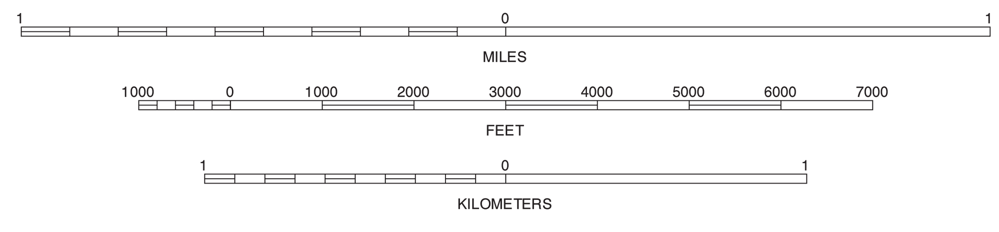

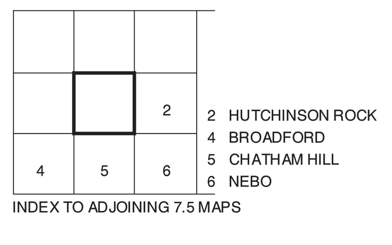

TAZEWELL SOUTH, VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 1 OF 16

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
HUTCHINSON ROCK QUADRANGLE
SHEET NUMBER 2 OF 16

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North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

1 TAZEWELL SOUTH
5 CHATHAM HILL
6 NEBO
7 RURAL RETREAT

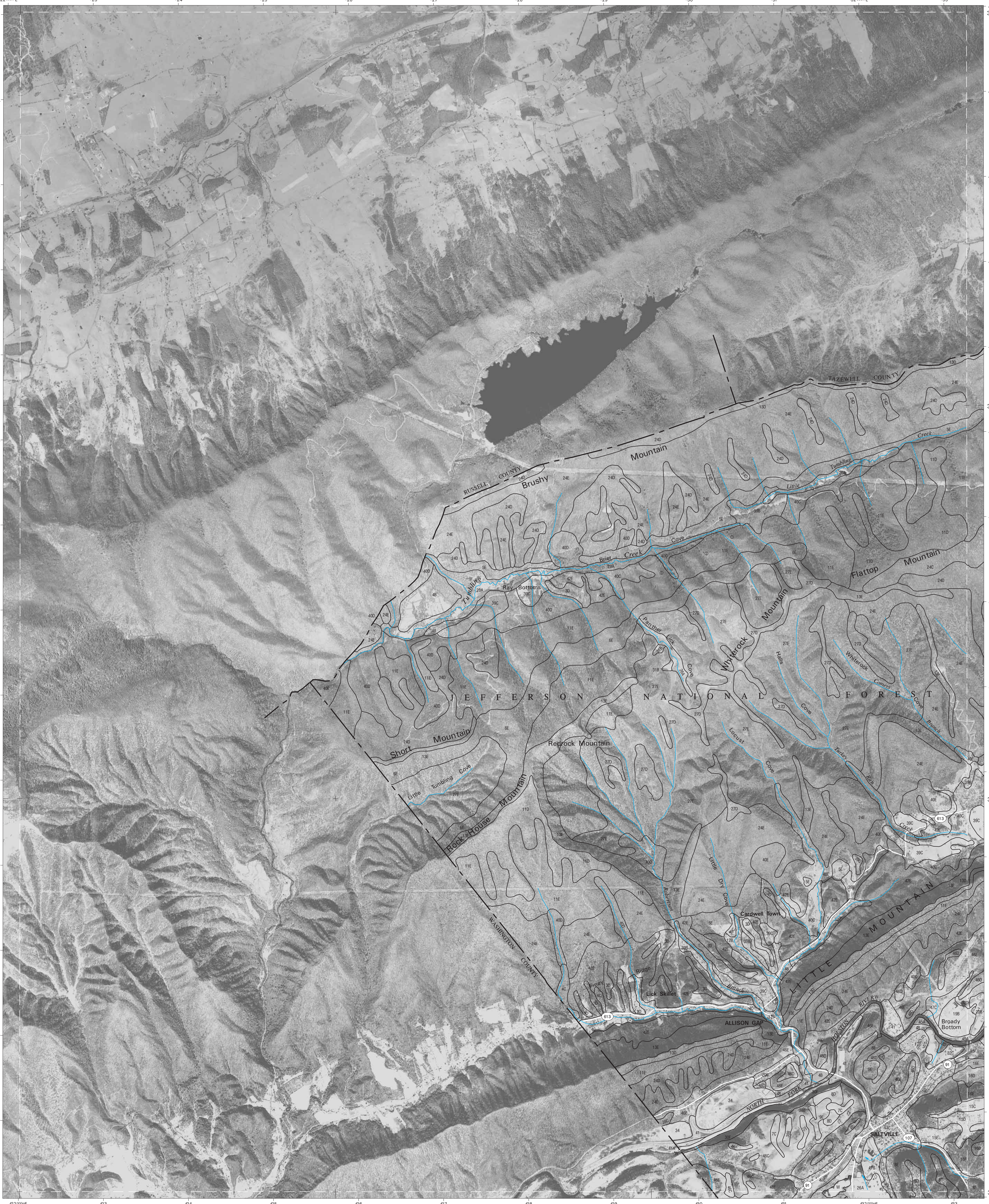
INDEX TO ADJOINING 7.5 MAPS

HUTCHINSON ROCK, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 2 OF 16

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

81° 52′30″ | 81° 50′00″ | 81° 47′30″ | 81° 45′00″

37° 00′00″



36° 52′30″ | 81° 52′30″ | 81° 50′00″ | 81° 47′30″ | 81° 45′00″

Joins sheet 4, Broadford

Joins sheet 8, Glade Spring

Joins sheet 9, Chilhowie

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES: 1 0 1

FEET: 1000 0 1000 2000 3000 4000 5000 6000 7000

KILOMETERS: 1 0 1

INDEX TO ADJOINING 7.5 MAPS

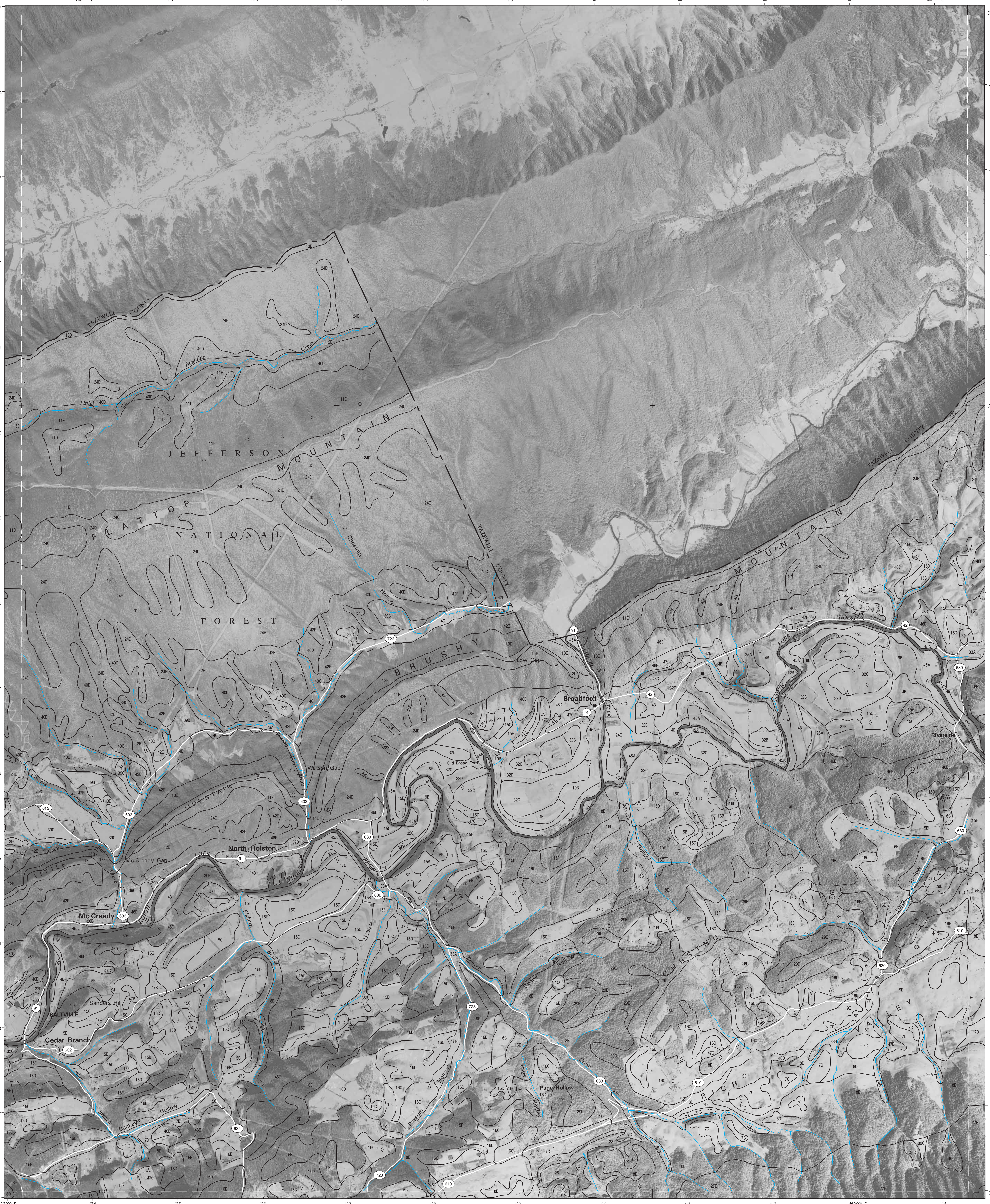
4 BROADFORD
8 GLADE SPRING
9 CHILHOWIE

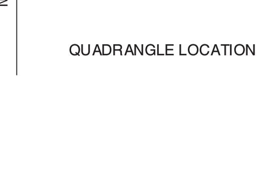
SALTVILLE, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 3 OF 16

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
BROADFORD QUADRANGLE
SHEET NUMBER 4 OF 16





QUADRANGLE LOCATION

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SCALE 1:24000

MILES

FEET

KILOMETERS

INDEX TO ADJOINING 7.5 MAPS

1 TAZEWELL SOUTH
3 SALTVILLE
5 CHATHAM HILL
8 GLADE SPRING
9 CHILHOWIE
10 MARION

BROADFORD, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 4 OF 16

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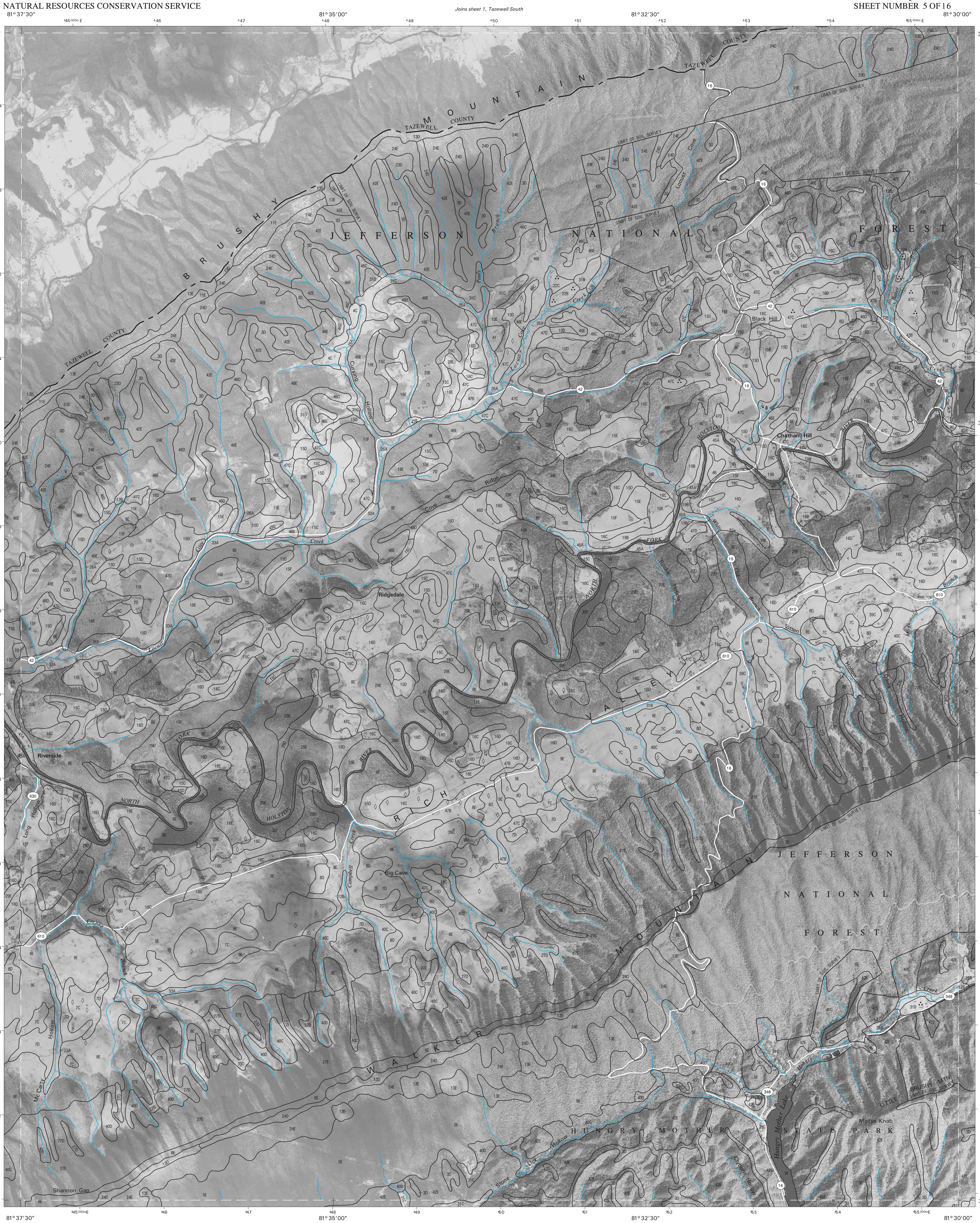
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
CHATHAM HILL QUADRANGLE
SHEET NUMBER 5 OF 16



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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

	1	2
4		6
9	10	11

1 TAZEWELL SOUTH
2 HUTCHINSON ROCK
4 BROADFORD
6 NEBO
9 CHILHOWIE
10 MARION
11 ATKINS

INDEX TO ADJOINING 7.5 MAPS

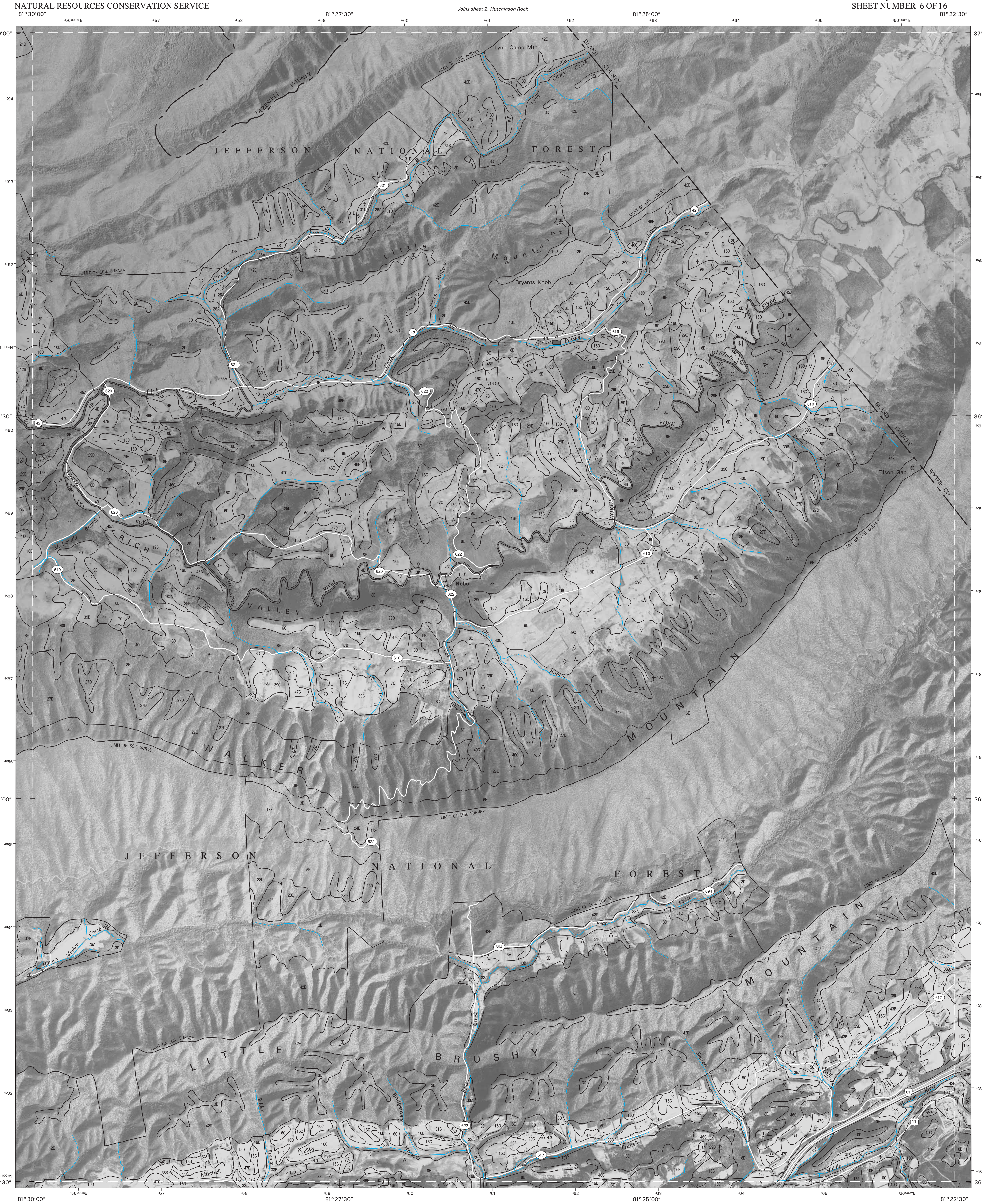
CHATHAM HILL, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 5 OF 16

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 1, Tazewell South

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
NEBO QUADRANGLE
SHEET NUMBER 6 OF 16



Joins sheet 10, Marion

Joins sheet 12, Cedar Springs

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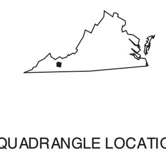
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

1	2	
5		7
10	11	12

1 TAZEWELL SOUTH
2 HUTCHINSON ROCK
5 CHATHAM HILL
7 RURAL RETREAT
10 MARION
11 ATKINS
12 CEDAR SPRINGS

INDEX TO ADJOINING 7.5 MAPS

NEBO, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 6 OF 16

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
RURAL RETREAT QUADRANGLE
SHEET NUMBER 7 OF 16

Joins sheet 2, Hutchinson Rock

Joins sheet 6, Nebo

Joins sheet 12, Cedar Springs

Joins sheet 11, Atkins

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

INDEX TO ADJOINING 7.5 MAPS

2 HUTCHINSON ROCK
6 NEBO
11 ATKINS
12 CEDAR SPRINGS

RURAL RETREAT, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 7 OF 16

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

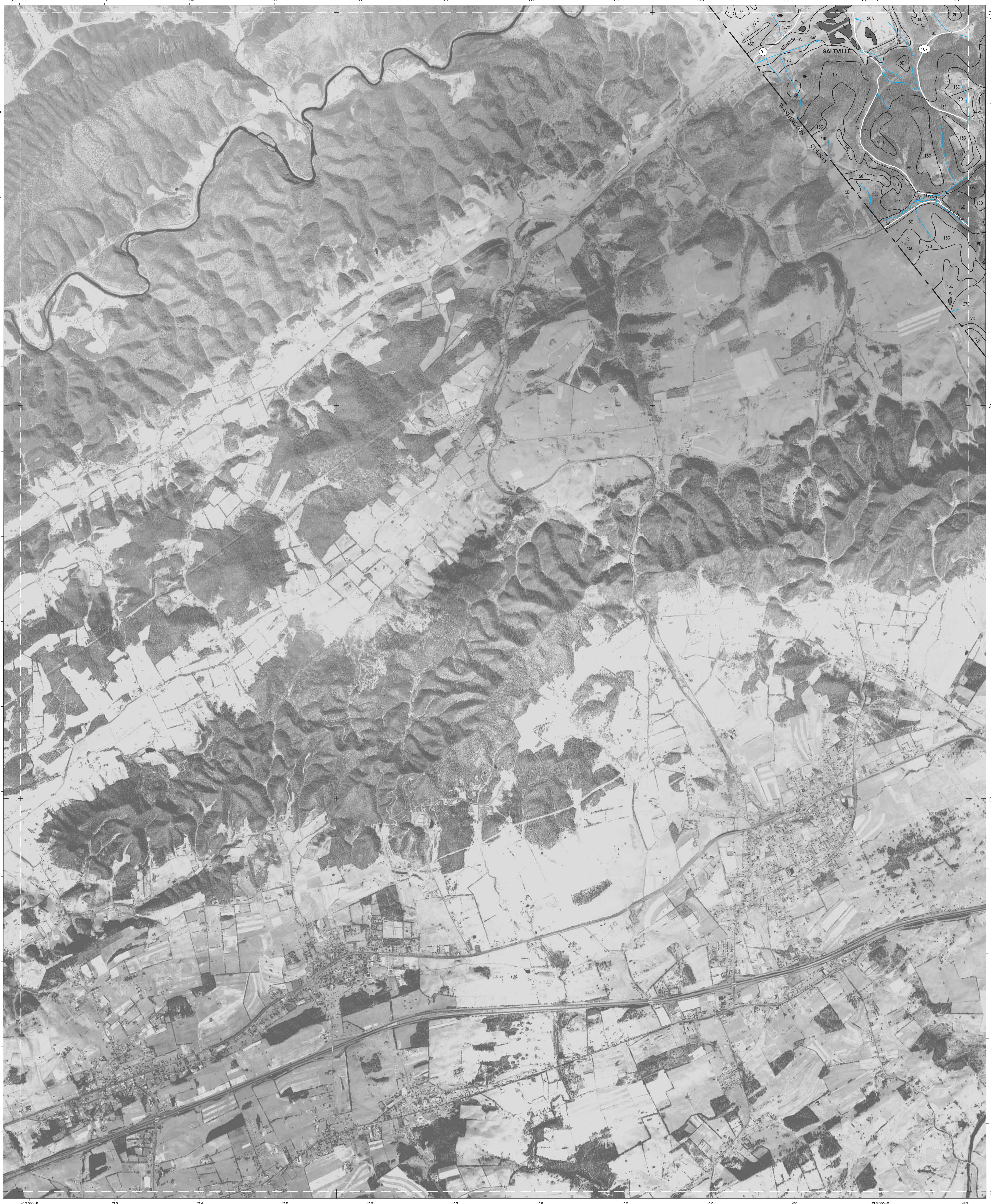
SMYTH COUNTY, VIRGINIA
GLADE SPRING QUADRANGLE
SHEET NUMBER 8 OF 16

Joins sheet 3, Saltville

Joins sheet 4, Broadford

81° 52′30″ — 81° 50′00″ — 81° 47′30″ — 81° 45′00″

36° 52′30″ — 36° 50′00″ — 36° 47′30″ — 36° 45′00″



Joins sheet 9, Chilhowie

Joins sheet 13, Konnarock

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

	3	4	3 SALTVILLE 4 BROADFORD
		9	9 CHILHOWIE
		13	13 KONNAROCK

INDEX TO ADJOINING 7.5 MAPS

GLADE SPRING, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 8 OF 16

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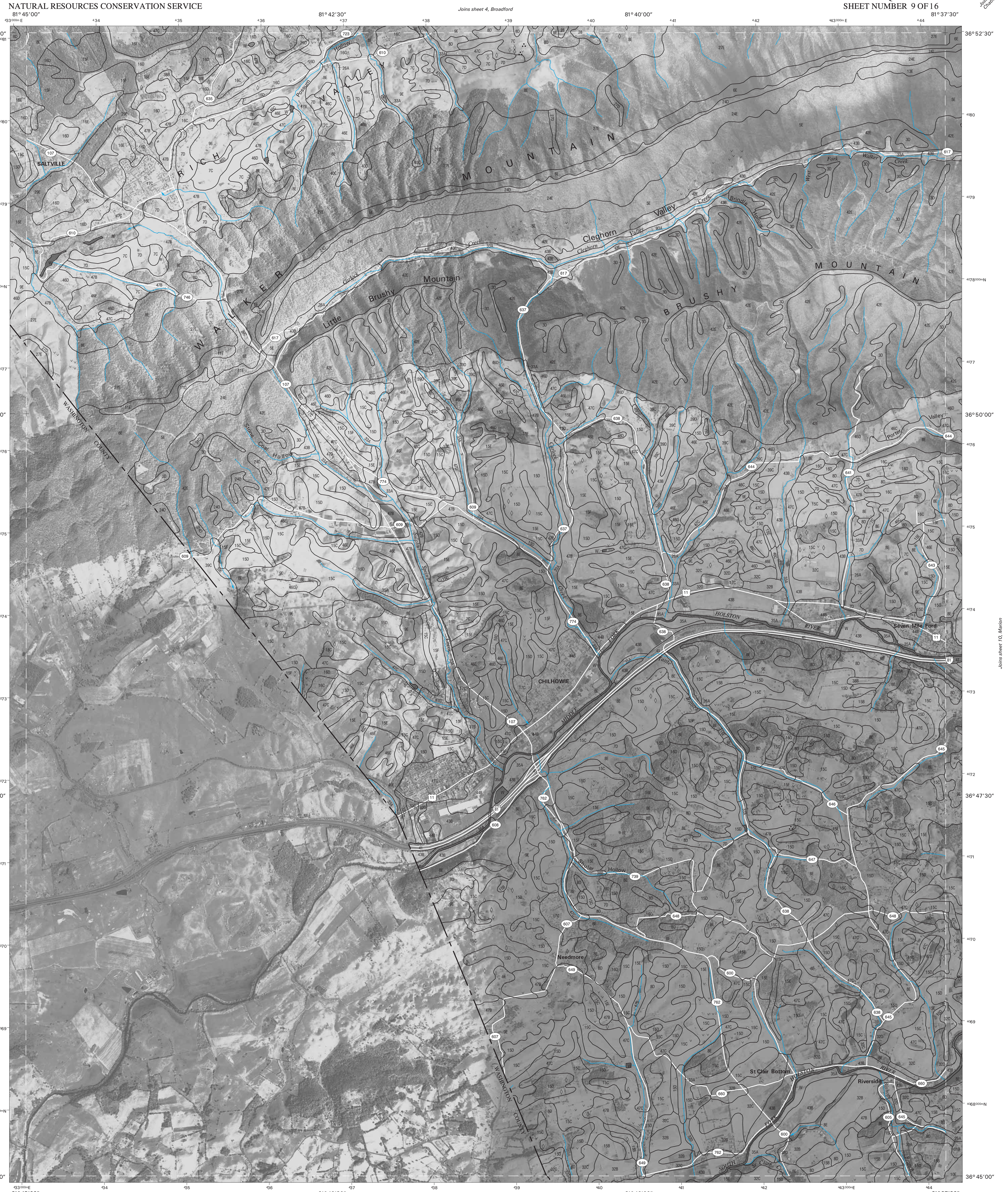
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
CHILHOWIE QUADRANGLE
SHEET NUMBER 9 OF 16



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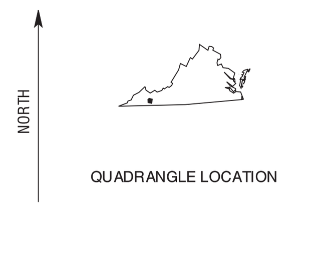
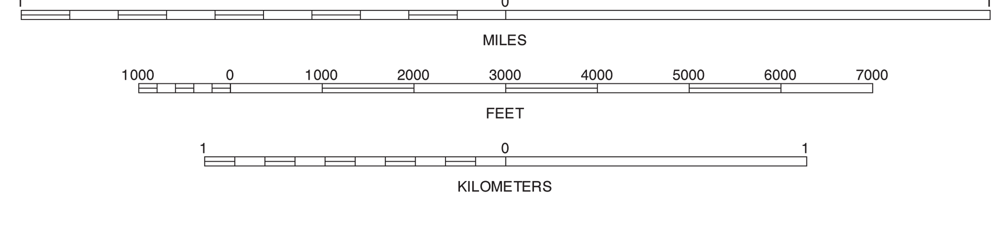
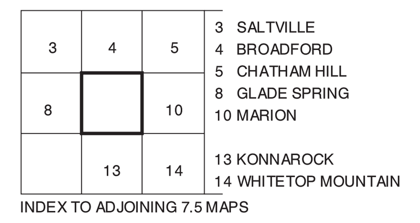


QUADRANGLE LOCATION

SCALE 1:24000





INDEX TO ADJOINING 7.5 MAPS

CHILHOWIE, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 9 OF 16

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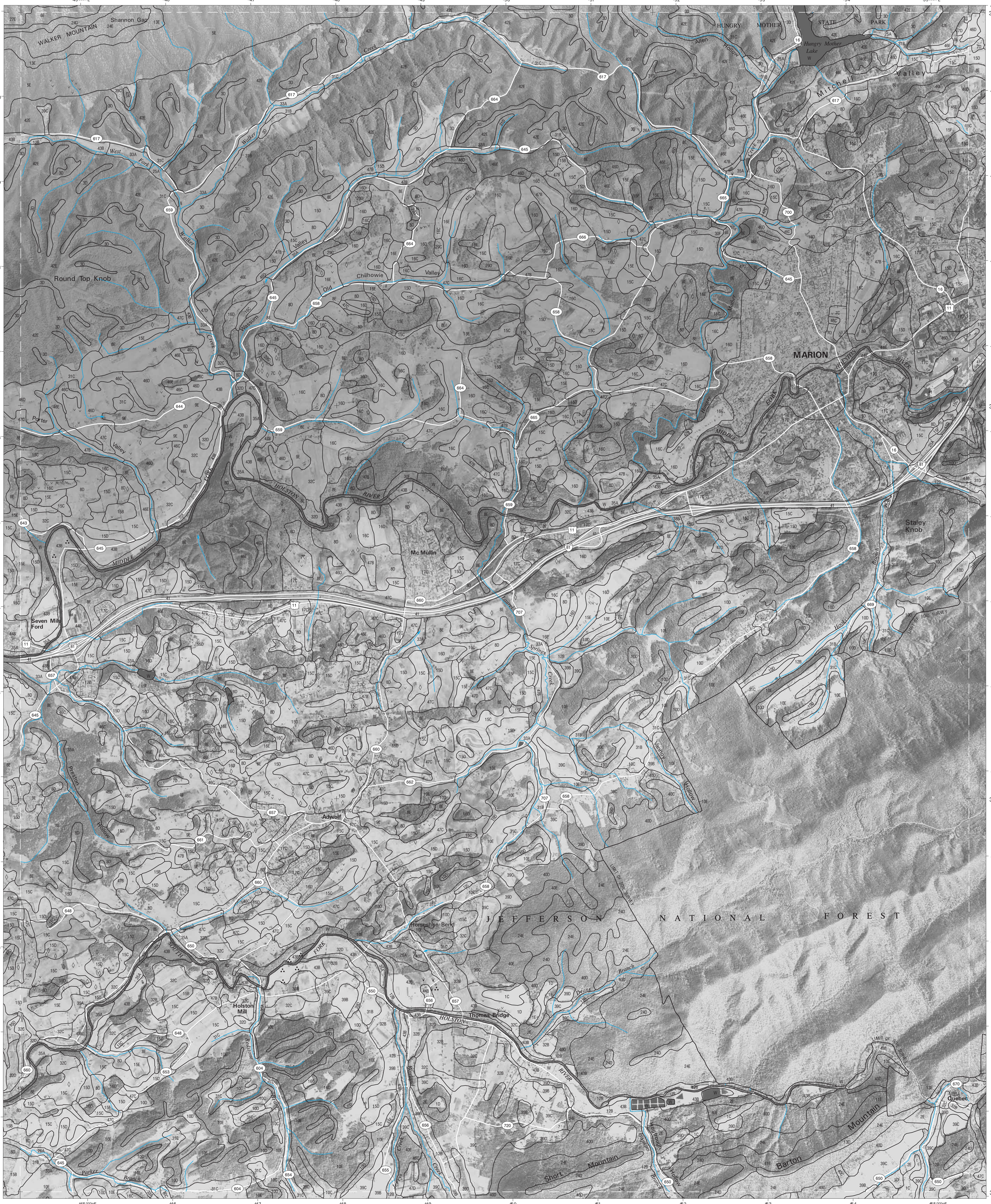
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
MARION QUADRANGLE
SHEET NUMBER 10 OF 16



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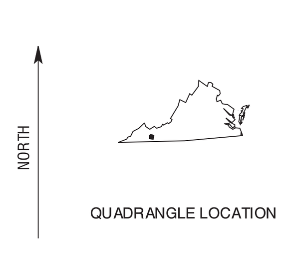

QUADRANGLE LOCATION

SCALE 1:24000

MILES: 1 0 1

FEET: 1000 0 1000 2000 3000 4000 5000 6000 7000

KILOMETERS: 1 0 1

4	5	6
9		11
13	14	15

4 BROADFORD
5 CHATHAM HILL
6 NEBO
9 CHILHOWIE
11 ATKINS
13 KONNAROCK
14 WHITETOP MOUNTAIN
15 TROUT DALE

INDEX TO ADJOINING 7.5 MAPS

MARION, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 10 OF 16

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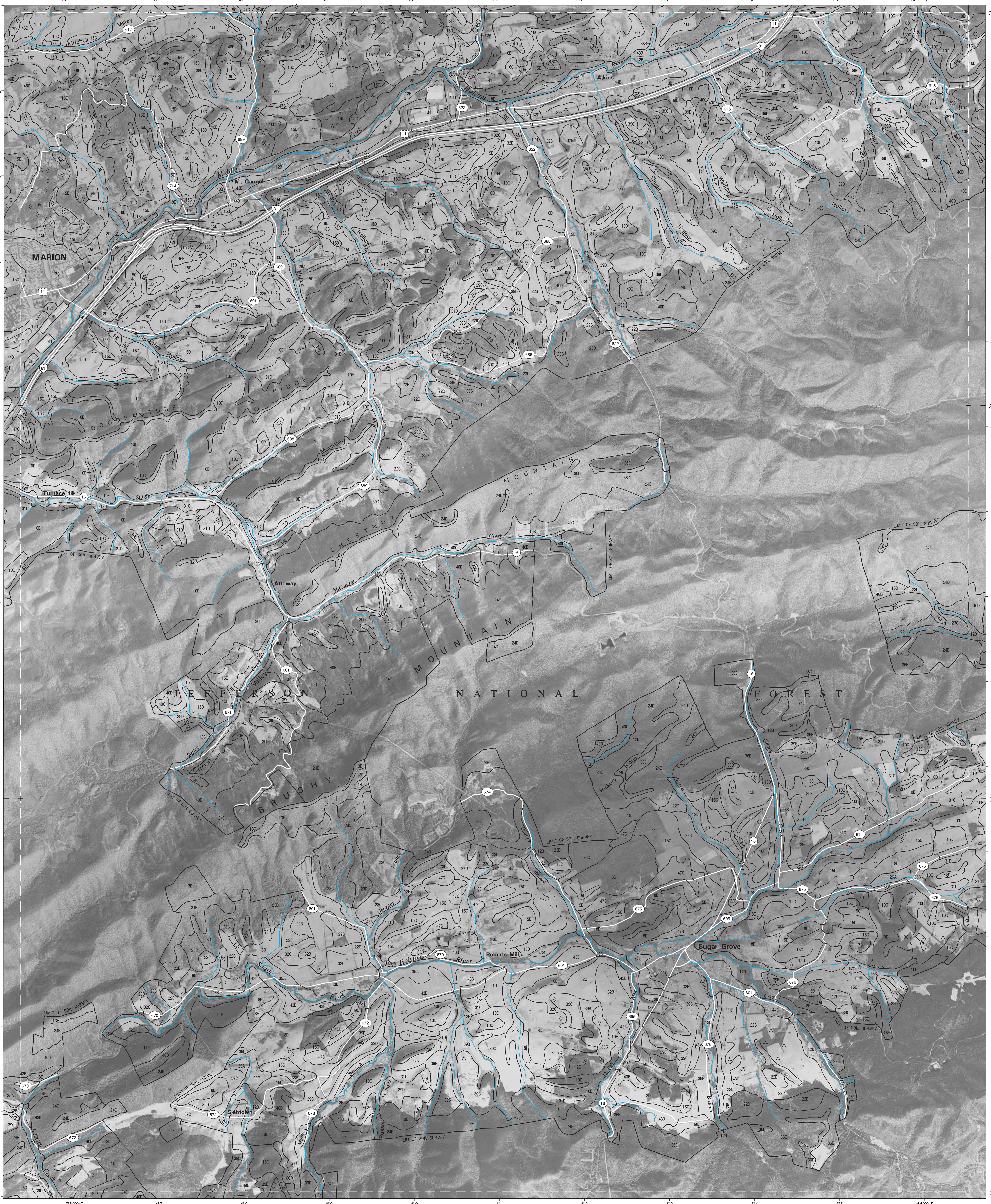
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
ATKINS QUADRANGLE
SHEET NUMBER 11 OF 16

Joins sheet 5, Chatham Hill

Joins sheet 6, Nebo

Joins sheet 7, Rural Retreat



Joins sheet 10, Marion

Joins sheet 12, Cedar Springs

Joins sheet 14, Whitetop Mountain

Joins sheet 15, Trout Dale

Joins sheet 16, Middle Fox Creek

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

5	6	7
10		12
14	15	16

5 CHATHAM HILL
6 NEBO
7 RURAL RETREAT
10 MARION
12 CEDAR SPRINGS
14 WHITETOP MOUNTAIN
15 TROUT DALE
16 MIDDLE FOX CREEK

INDEX TO ADJOINING 7.5 MAPS

ATKINS, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 11 OF 16

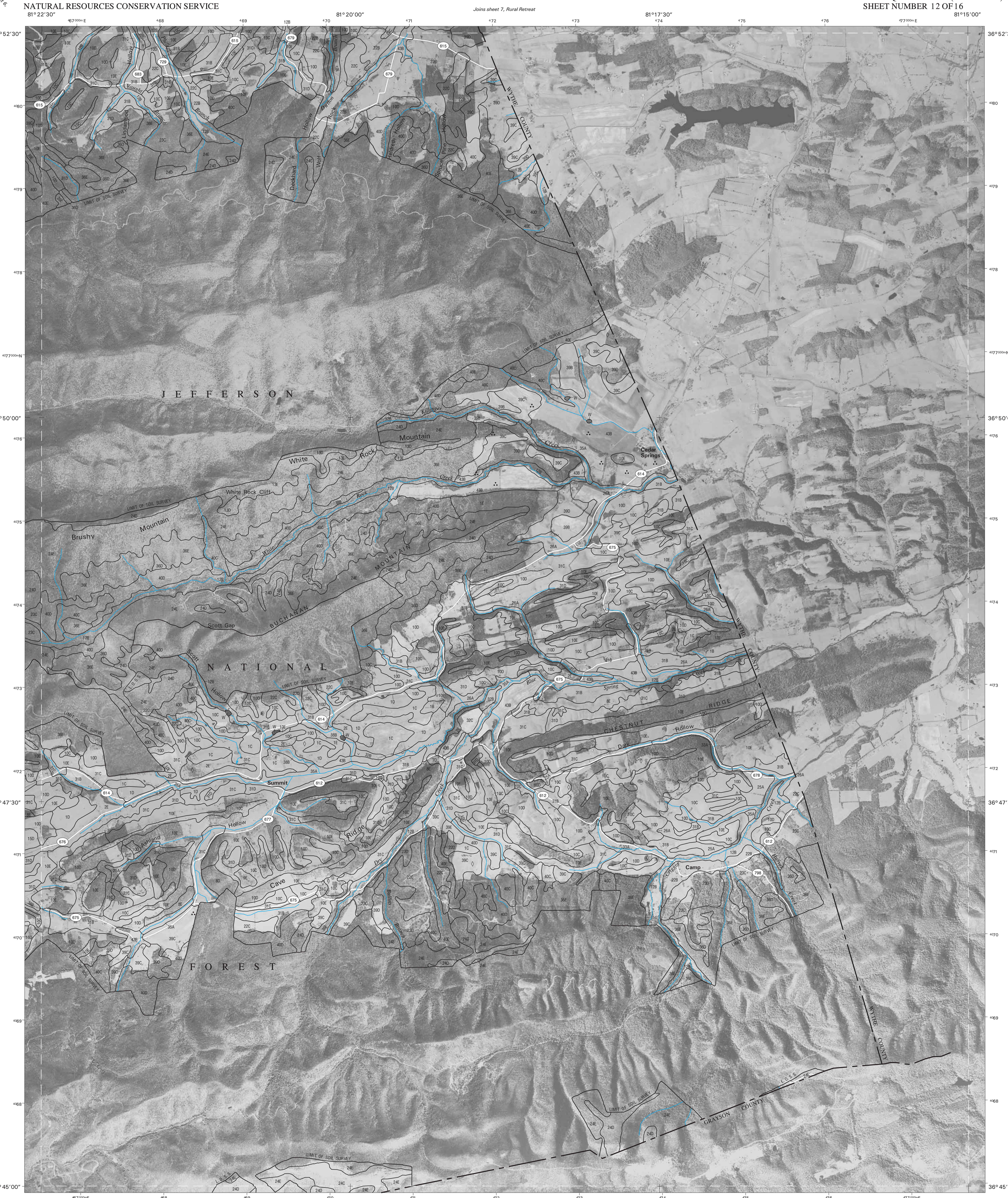
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
CEDAR SPRINGS QUADRANGLE (OVERSIZED)
SHEET NUMBER 12 OF 16

Joins sheet 6, Nebo

Joins sheet 7, Rural Retreat



Joins sheet 11, Atkins

Joins sheet 15, Trout Dale

Joins sheet 16, Middle Fox Creek

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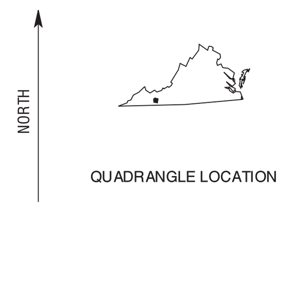
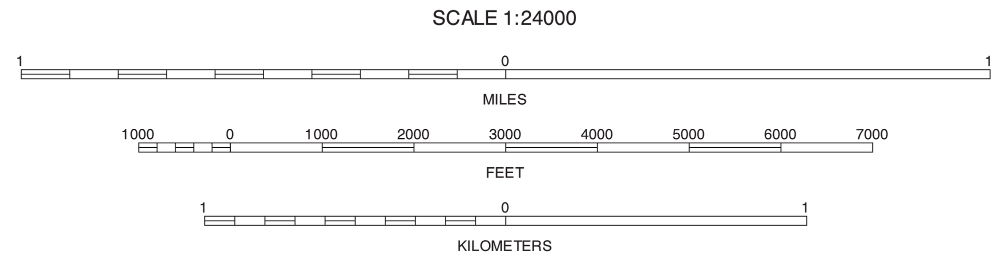


QUADRANGLE LOCATION

SCALE 1:24000



6	7	
11		
15	16	

6 NEBO
7 RURAL RETREAT
11 ATKINS
15 TROUT DALE
16 MIDDLE FOX CREEK

INDEX TO ADJOINING 7.5 MAPS

CEDAR SPRINGS, (OVERSIZED) VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 12 OF 16

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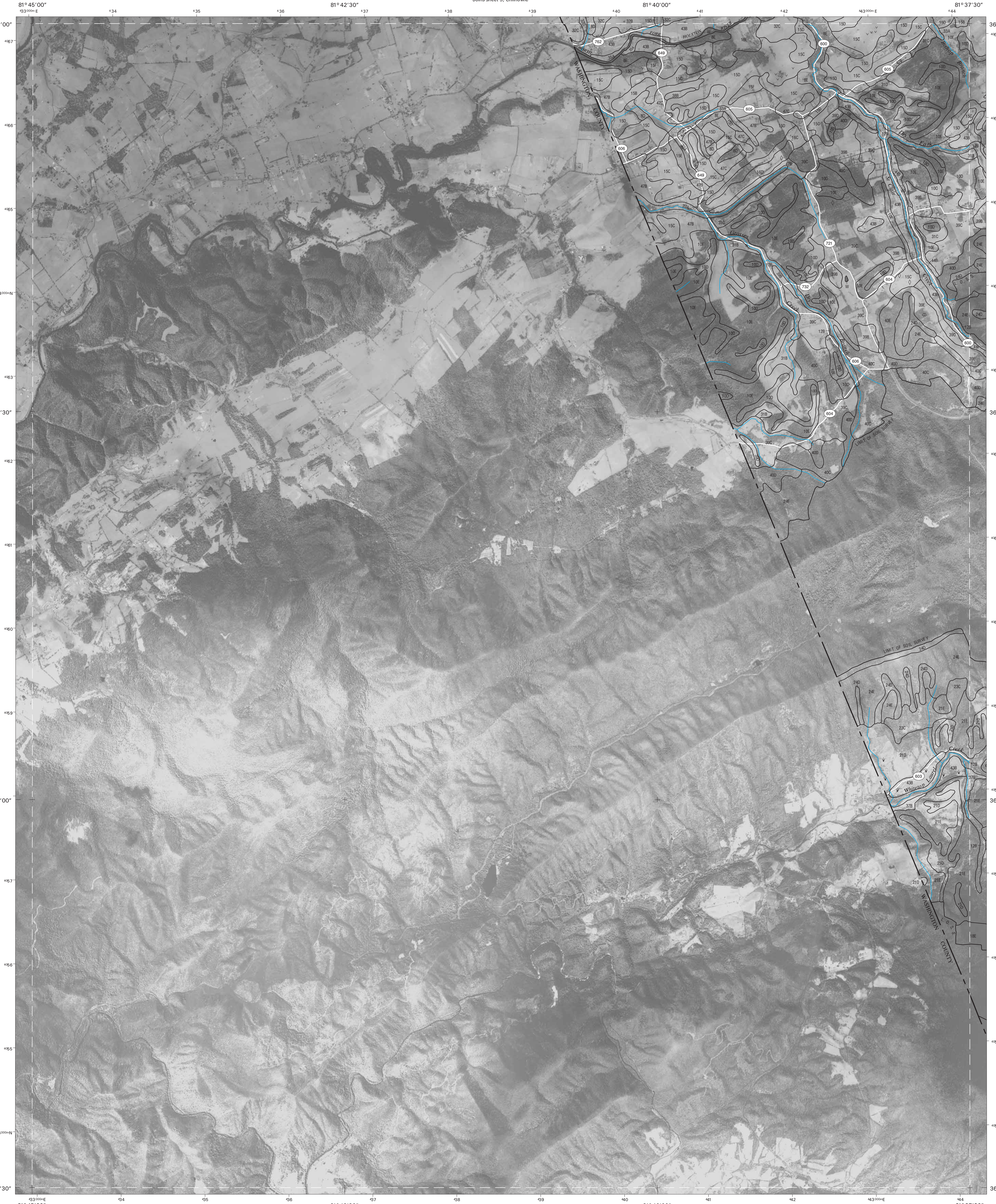
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
KONNAROCK QUADRANGLE
SHEET NUMBER 13 OF 16



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

8	9	10
		14

8 GLADE SPRING
9 CHILHOWIE
10 MARION
14 WHITETOP MOUNTAIN

INDEX TO ADJOINING 7.5 MAPS

KONNAROCK, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 13 OF 16

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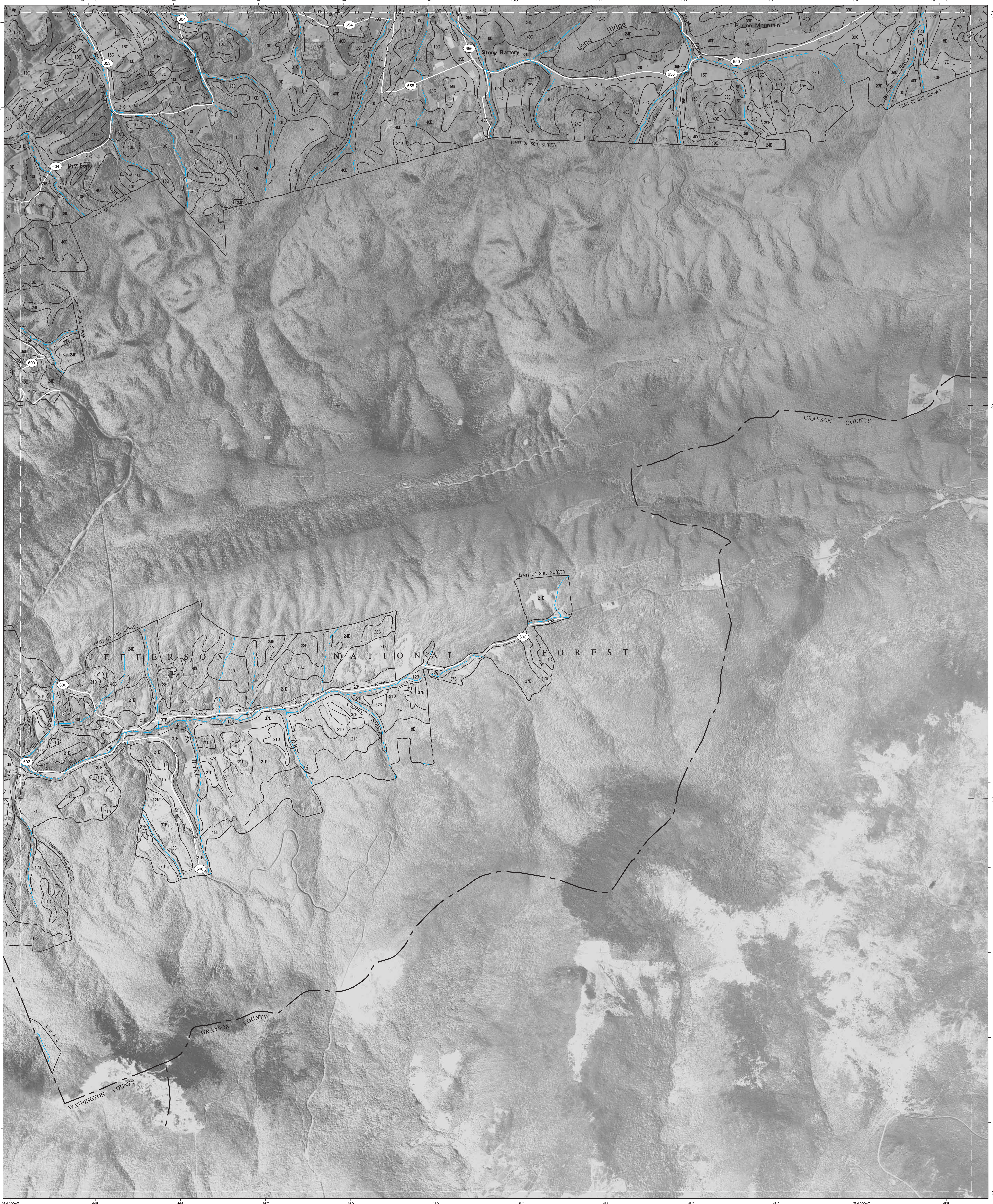
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
WHITETOP MOUNTAIN QUADRANGLE
SHEET NUMBER 14 OF 16

Joins sheet 9, Chilhowie

Joins sheet 10, Marion

Joins sheet 11, Atkins



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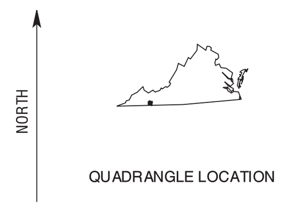
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

9	10	11
13		15

9 CHILHOWIE
10 MARION
11 ATKINS
13 KONNAROCK
15 TROUT DALE

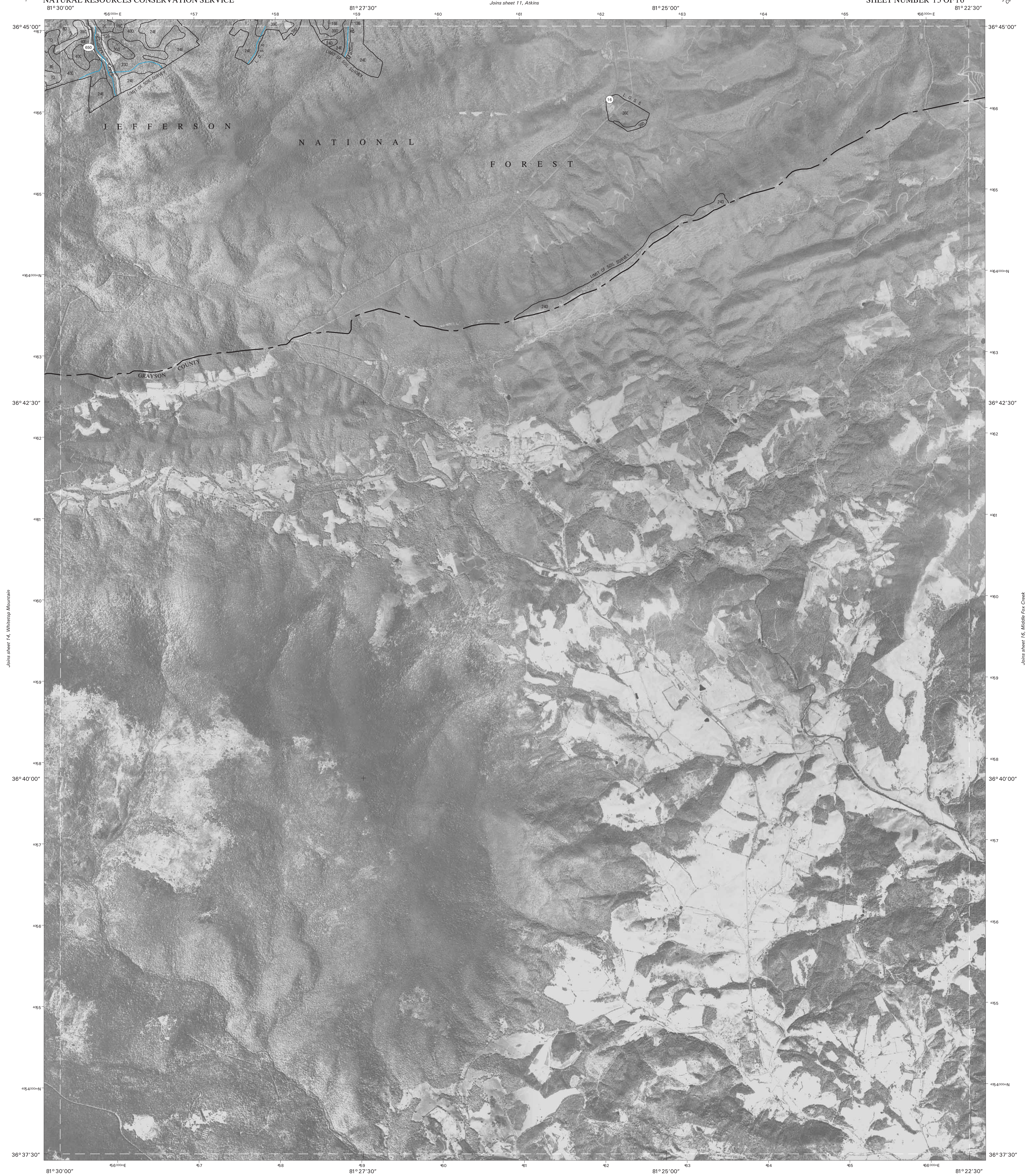
INDEX TO ADJOINING 7.5 MAPS

WHITETOP MOUNTAIN, VIRGINIA
7.5 MINUTE SERIES
SHEET NUMBER 14 OF 16

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

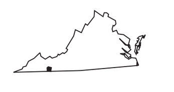
SMYTH COUNTY, VIRGINIA
TROUT DALE QUADRANGLE
SHEET NUMBER 15 OF 16



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S.Department of Interior, Geological Survey, from 1995-2000 aerial photography. Hydrography and cultural features were acquired from NRCS and edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

10	11	12
14		16

10 MARION
11 ATKINS
12 CEDAR SPRINGS
14 WHITETOP MOUNTAIN
16 MIDDLE FOX CREEK

INDEX TO ADJOINING 7.5 MAPS

TROUT DALE, VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 15 OF 16

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NATURAL RESOURCES CONSERVATION SERVICE

SMYTH COUNTY, VIRGINIA
MIDDLE FOX CREEK QUADRANGLE
SHEET NUMBER 16 OF 16

Joins sheet 11, Atkins

Joins sheet 12, Cedar Springs

81° 22′30″ | 81° 20′00″ | 81° 17′30″ | 81° 15′00″

36° 45′00″

Joins sheet 15, Trout Dale

36° 42′30″

36° 40′00″

36° 37′30″

81° 22′30″ | 81° 20′00″ | 81° 17′30″ | 81° 15′00″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

11	12	
15		

11 ATKINS
12 CEDAR SPRINGS
15 TROUT DALE

INDEX TO ADJOINING 7.5 MAPS

MIDDLE FOX CREEK, VIRGINIA

7.5 MINUTE SERIES
SHEET NUMBER 16 OF 16

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